AUTHOR INDEX

A

Abt, H. A., 46, 300, 303, 304, 305, 306, 325, 340, 341, 342, 343, 344, 345, 346, 368, 433, 435, 445, 446, 450, 452
Adam, M. G., 344
Adgie, R. L., 147
Aleshin, V. I., 359, 369
Alexander, J. B., 106, 138
Alfvén, H., 245, 312, 313, 315, 416
Allen, C. W., 69, 219
Allen, L. R., 147, 148
Aller, H. D., 83
Aller, L. H., 2, 4, 7, 8, 9, 11, 12, 118, 121, 207, 220, 300, 342, 343, 449, 452
Altenhoff, W., 80, 271
Ambartsumyan, V. A., 400, 404, 406, 419
Anderson, B., 147, 161
Applequist, N. L., 448, 449
Arp, H. C., 19, 24, 32, 120, 136, 139, 160, 289
Athay, R. G., 5
Auer, L. H., 414, 429, 449, 452
Auffray, J. P., 238
Auluck, F. C., 315
Avrett, E. H., 4, 203

B

Baade, W., 145, 149, 155, 157, 161, 270, 412, 418
Baars, J. W. M., 79, 82, 88, 168
Babcock, H. D., 293
Babcock, H. W., 2, 293, 294, 295, 297, 298, 302, 303, 305, 306, 307, 308, 309, 314, 317, 318, 319, 320, 321, 325, 326, 340, 341, 342, 343, 344, 345, 346
Bachus, G. E., 314
Bahcall, J. N., 167, 419, 420, 427
Bahner, K., 307, 342, 343
Baker, J. M., 238
Baker, N., 322, 354, 355, 357, 358, 361, 364, 365, 366, 367, 368, 369, 371, 373, 375, 376, 377, 379, 380, 381, 383
Balazs, J., 373
Baldwin, J. E., 264, 267
Bappu, M. K. V., 439, 441, 449
Barat, J., 270
Barbier, D., 340, 342, 343, 344, 345
Bardeen, J. M., 423
Barr, J. M., 37
Barrett, A. H., 246
Barrett, S. B., 340, 341, 342, 343, 344, 345, 346
Baschek, B., 4, 9, 342, 343, 344, 345, 346, 465
Basinski, J. M., 109, 121, 132, 133
Batchelor, G. K., 313
Bates, D. R., 209, 214, 223, 239, 240
Baum, W. A., 193
Baxandall, F. E., 340
Beard, M., 96, 112, 114, 130
Beenakker, J. J. M., 225
Beer, A., 441
Behr, A., 269, 299, 342, 343, 344, 345, 444
Bell, R. A., 8
Belopolsky, A., 306, 344
Bely-Dubau, F., 11
Benson, A. C., 314
Berge, G. L., 268, 271, 274, 277, 284, 285, 287, 289
Berkhuijsen, E. M., 264, 267, 268, 269, 274
Bernstein, I. B., 418
Bertaud, Ch., 327, 340, 341, 342, 343, 344, 345, 346
Bertiau, F. C., 201
Beutler, H., 235
Bidelman, W. P., 12, 299, 300, 302, 318, 340, 341, 342, 343, 344, 345, 346, 433, 452, 453
Biermann, L., 313, 314, 317, 318
Bigelow, F. H., 293
Binder, A., 19, 22
Binnendijk, L., 68, 69
Biraud, F., 161
Bird, J. F., 124
Biswas, S., 220
Blaauw, A., 453
Blackett, P. M. S., 314, 344
Blanco, V. M., 190
Bless, R. C., 452
Bodenheimer, P., 14
Boggess, A. III, 240, 436
Böhm, K. H., 340, 343, 344, 345, 346
Böhm-Vitense, E., 51, 189, 319, 379, 380
Bok, B. J., 95-144; 107, 109, 117, 118, 121, 131, 132, 133, 434
Bok, P. F., 107, 109, 121, 131, 132, 133
Boland, J. W., 271, 274
Bologna, J. M., 151, 265, 274, 277, 279
Bolton, J. G., 151, 256, 269, 272, 274, 277, 279
Bondi, H., 314, 317
Bonhoeffer, K. F., 213, 231
Bonsack, W. K., 13, 191, 307, 308, 319, 342, 344
Borgman, J., 194, 197, 436, 445, 453, 468
Boury, A., 360
Bowyer, S., 414
Boyarchuk, A. A., 302
Boyarchuk, M. E., 8, 9
Boyce, P. B., 19, 22
Bozman, W. R., 2
Bracewell, R. N., 77, 146, 152, 156, 245, 248, 281
Braun, E. H., 80
Bray, R. J., 293, 298, 306
Brewer, K. R. W., 343, 344, 345
Brodskaja, E. S., 344
Brooker, A. A., 32
Broten, N. W., 80, 118, 263, 265, 269, 281, 284
Brouw, W. N., 245, 249, 264, 265, 267, 268, 269, 274
Brown, R. H., 147, 148, 201
Brownlee, R. R., 358, 360, 361, 389
Brueckel, F., 19, 24, 32
Bullard, E. C., 314
Burbidge, E. M., 1, 3, 6, 8, 12, 153, 154, 158, 160, 162, 163, 164, 300, 303, 304, 307, 318, 322, 324, 342, 343, 344, 345, 412
Burbidge, G. R., 1, 3, 6, 8, 12, 153, 154, 158, 160, 163, 164, 172, 253, 300, 303, 304, 307, 318, 322, 324, 342, 343, 344, 345, 412, 413, 414, 416, 418

Burd, S., 307, 344
Burke, B. F., 208
Burn, B. J., 254, 255, 256, 257, 258, 269, 270, 271, 286
Burwell, C. G., 299, 342, 343, 345
Buscombe, W., 96, 101, 107, 120, 124, 125, 126, 130
Byram, E. T., 414

C

Cameron, A. G. W., 171, 172, 189, 190, 232, 406, 407, 410, 414, 415, 419, 420, 421
Cameron, R. C., 346, 438, 445
Cannon, A. J., 107
Carter, A. W. L., 96, 112, 114, 130, 152, 156
Carter, E. B., 214
Carter, J. C., 246
Carter, W. W., 2
Casati, B., 302, 304, 342, 343
Castor, J., 358
Caughlan, G. R., 12
Cayrel, G., 3, 4, 9
Cayrel, R., 1-18; 3, 4, 5, 9
Cayrel, T., 4
Cayrel de Strobel, G., 1-18; 9
Chalonge, D., 7, 303, 340, 342, 343, 344, 345, 438, 454, 462
Chamberlain, J., 7, 8, 9
Chandra, S., 439, 441, 449
Chandrasekhar, S., 185, 188, 246, 276, 312, 313, 314, 315, 322, 323, 353, 410, 451
Chang, D. B., 287
Chernikov, N. A., 408
Christy, R. F., 353-92; 358, 359, 360, 361, 366, 367, 368, 369, 370, 371, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 412
Chu, T. S., 80
Chubaryan, E. V., 407
Chubb, T. A., 414
Clark, B. G., 148, 151, 161
Clark, G., 414, 415, 418
Clark, G. W., 415
Clayton, D. D., 12, 412, 418, 421
Clement, M. J., 353
Cocke, W. J., 404
Code, A. D., 203, 445
Cohen, M. H., 263
Cole, D. J., 146, 151, 156, 157, 263, 265, 269, 279, 281, 289
Colgate, S. A., 408, 409, 410, 414, 418
Collins, G. W., 451
Comes, F. J., 239
Conti, P. S., 5, 8, 9, 10, 13, 191, 465
Conway, R. G., 147
Cook, G. R., 239
Cooley, J. W., 238
Coolidge, A. S., 211, 213, 217, 219
Cooper, B. F. C., 146, 151, 156, 157, 245, 274, 279, 281, 284, 289
Corliss, C. H., 2, 215, 216, 220, 340, 343, 344
Cousins, T. E., 245, 281
Cowley, A. P., 2
Cowley, C. R., 2
Cowling, T. G., 50, 293, 294, 312, 314, 315, 321, 322, 340, 341, 342, 343, 344, 345, 346, 360
Cox, A. N., 358, 359, 360, 361, 364, 366, 367, 368, 369, 371, 379, 381, 382, 389
Cox, J. P., 322, 354, 356, 357, 358, 359, 362, 363, 364, 365, 366, 367, 368, 369, 371, 377, 379, 380, 381, 382
Craddock, W. L., 418, 421
Crawford, D. L., 433, 434, 436, 439, 441, 442, 443, 444, 450, 459, 460, 461, 462, 463, 465
Crawford, J. A., 36, 48
Croom, D. L., 88
Cuffey, J., 139

D

Dalgarno, A., 209, 240, 241
Danziger, I. J., 8, 9, 12, 106, 391
Darwin, G. H., 39
Das Gupta, M. K., 146
Davidson, E. R., 214
Davies, R. D., 151, 152, 254, 263, 265, 266, 268, 269, 270, 271, 273, 274, 276, 277, 284, 285, 286, 287
Davis, L., 287
Davis, R. H., 214
Daywitt, W. C., 86
Deeming, T. J., 469
De Jager, C., 317
Delache, P., 2
Deloli, E. P., 80, 81, 83
De Loore, C., 317
Demarque, P., 376, 468
Demers, S., 369
Dennis, T. R., 83
Dessy, J. L., 106
Deutsch, A. J., 10, 29, 30, 31, 32, 45, 294, 303, 304, 306, 307, 312, 319, 321, 340, 342, 343, 344, 345, 346, 465
de Vaucouleurs, G., 96, 100, 101, 105, 124, 125, 126, 128, 130, 158
Dewhirst, D. W., 161
Diamond, H., 418
Dicke, R. H., 92, 218
Dickel, H. R., 118, 121
Dickens, R. J., 383, 384, 387
Dieke, G. H., 234, 235, 236
Ditchburn, R. W., 239
Divan, L., 303, 340, 342, 343, 344, 345, 436
Dixon, M. E., 10, 11
Dmitriev, N. A., 406
Doherty, L., 118
Dombrovsky, V. A., 245, 269
Donaldson, W., 147
Dorn, D. W., 411
Doroshkevich, A. G., 428
Drake, F. D., 87
Dressler, K., 207-44; 230
Dricot, G., 322
Duflot, M., 108
Dukel'skii, V. M., 214
Dungey, J. W., 312, 315, 316
Dunn, G. H., 240
Durham, G. E., 345
Durie, R. A., 214, 220, 232, 233
Dyson, F., 58

E

Ebert, R., 172
Eddington, A. S., 185, 207
Edmonds, F. N., 203, 462
Efimov, Y. S., 302
Eggen, O. J., 7, 10, 11, 19, 32, 36, 140, 195, 201, 299, 303, 305, 340, 342, 343, 344, 345, 346, 388, 448
Ehrenson, S., 212
Eichhorn, H. K., 61, 84
Eidman, V. Ya., 250
Eilers, D. D., 359, 364, 366, 367, 368, 369, 371, 379, 381, 382
Ellis, G. F. R., 428

Ellis, G. R. A., 276
Elsässer, H., 126
Elsasser, W. M., 314
Elsmore, B., 148, 150, 272, 282
Elvey, C. T., 54
Elvius, A., 289
Epps, E., 140
Epstein, I., 356, 362, 375
Erkovich, S. P., 222, 240
Estermann, I., 239
Estin, A. J., 86
Eugène-Praderic, F., 5, 6
Ezer, D., 171, 189, 190

F

Falthammar, C. G., 312
Fanucci, J., 418
Faraggiana, R., 300, 303, 342, 343, 344, 345
Farnsworth, G., 306, 344
Faulkner, D. J., 118, 120, 121
Faulkner, J., 171, 188, 189, 383, 387
Faure, B., 459
Feast, M. W., 23, 26, 27, 28, 31, 32, 33, 107, 108, 109, 111, 119, 120, 121, 125, 126, 127, 128, 136, 374
Fehrenbach, Ch., 108
Fellgett, P. B., 193
Fermi, E., 276, 315, 418
Fernie, J. D., 32, 369, 374, 376, 441, 470
Ferraro, V. C. A., 312, 315, 321, 322
Fichtel, C. E., 220
Field, G. B., 207-44; 163
Fields, P. R., 411
Findlay, J. W., 77-94; 80, 81, 86, 87, 93
Fink, U., 213, 217, 219
Finzi, A., 421, 422
Fischer-Hjalmars, I., 214
Flannery, M. R., 239
Flather, E., 276
Foltz, J. V., 213, 215, 217, 219
Fontana, P. R., 238
Foster, E. W., 238
Fowler, R. G., 239
Fowler, W. A., 1, 3, 6, 12, 172, 318, 322, 324, 342, 343, 344, 345, 412
Franklin, F. A., 343
Frey, D. A., 238
Friedman, H., 414
Frost, A. D., 147
Frost, E. B., 340, 341, 342, 343, 344, 345, 346

G

Gabovitš, J., 21
Gabriel, M., 360
Gamow, G., 419
Gardner, F. F., 245-92; 150, 151, 152, 159, 245, 254, 256, 263, 265, 266, 268, 269, 270, 271, 272, 273, 274, 276, 277, 279, 281, 282, 284, 285, 286, 287
Garmire, G., 414, 415, 418
Garstang, R. H., 212, 344
Gascoigne, S. C. B., 96, 101, 106, 124, 125, 126, 130, 131, 134, 136, 137, 140, 141
Gaustad, J. E., 22, 171, 176, 177, 180, 209, 220, 232, 240
Gehrels, T., 219
Gellman, H., 314
Gent, H., 147
Gerhausen, J., 215
Gershberg, R. E., 124
Getmansev, G. G., 147
Geyer, E., 383
Ghiorso, A., 411
Giacconi, R., 414, 415, 418
Gibson, G., 240
Gibson, J., 46
Gingerich, O., 223
Ginzburg, V. L., 147, 150, 250, 253, 419
Giver, L. P., 382
Gjellestad, G., 306, 307, 315, 322, 341, 344, 345
Gökdogan, N., 2
Gold, T., 176, 314, 316
Goldberg, L., 220
Gollnow, H., 117, 297, 342
Gol'nev, V. Ya., 151, 284, 285
Golson, J. C., 303, 304, 305, 340, 341, 342, 343, 344, 345, 346, 434, 436, 443, 445, 446, 447
Good, R. H., Jr., 213
Goranson, R., 19, 22
Gordon, H. C., 301, 343
Gordon-Smith, A. C., 86
Gough, D. O., 376
Gould, N. L., 38
Gould, R. J., 171, 175, 176, 207, 209, 224, 225, 226, 231, 233, 414, 416, 417, 418
Graham, J. A., 108
Grandsire, G., 239
Gratton, L., 8, 9
Greene, J. G., 84
Greenstein, J. L., 2, 7, 8, 9, 11, 13, 14, 161, 172, 191, 342, 343, 344, 345
Griffin, R. F., 434, 469, 470
Griffiths, D. H., 314
Griffiths, K., 171, 188, 189
Grotrian, W., 320
Gum, C. S., 105
Gunn, J. E., 167
Gupta, B. K., 240
Gursky, H., 414, 415, 418
Gusenov, I., 421
Guss, D. E., 220
Güssow, M., 49, 344
Guthnick, P., 303, 306, 307, 340, 342, 343, 344
Guthrie, B., 450
Gyldenkerne, K., 468, 470

H

Hack, M., 48, 49, 300, 302, 303, 304, 340, 342, 343, 344, 345, 346, 446
Hain, K., 322
Hale, G. E., 293, 297
Hall, J. S., 267, 289
Hallam, K. L., 441, 448, 449
Hamilton, P. A., 276
Hanbury-Brown, R., 265, 270
Hansen, C. J., 422
Hansen, K., 51
Hardie, R. H., 50, 304, 344, 442, 443
Hardorp, J., 4
Hare, W. F. J., 219
Harper, W. E., 305, 342
Harris, D. L., 67, 201, 202, 443, 452, 462
Harris, F. E., 214
Harris, I. A., 84
Harrison, B. K., 393, 394, 396, 402, 404, 405, 406, 407, 408, 427
Harrison, E. R., 407
Harteck, P., 213, 231
Harting, E., 146, 161, 267
Harwit, M., 231
Hattori, T., 172, 180
Hawking, S., 428
Hayakawa, S., 175, 176, 178
Hayashi, C., 171-92; 49, 171, 172, 180, 181, 182, 184, 188, 189, 190, 313
Hayashi, M., 171, 189, 190

Hazard, C., 147, 270
Hazelhurst, J., 8, 9, 10
Healey, J. R., 118, 119, 122, 123
Heddle, D. W. O., 209
Heidman, J., 161
Heiles, C., 416, 418
Heiser, A. M., 8
Helfer, H. L., 2, 4, 7, 8, 9, 10, 11, 14, 469
Henize, K. G., 109, 111, 117, 118
Henyey, L. G., 190
Herbig, G. H., 8, 9, 13, 14, 182, 191, 226, 306, 346
Herlofson, N., 245, 416
Hertzsprung, E., 72
Hertzsprung, E. J., 125
Herzberg, G., 208, 209, 214, 215, 219, 220, 232, 233, 236, 240
Herzenberg, A., 314
Hewish, A., 89, 418
Hill, E. R., 122, 248
Hill, G. W., 39
Hill, P. W., 12
Hiltner, W. A., 196, 270, 299, 303, 307, 342, 343, 344
Hindman, J. V., 96, 112, 113, 114, 117, 124, 125, 130
Hoag, A. A., 441, 448, 449
Hofmeister, E., 189, 388, 389
Hogg, A. R., 113, 131
Hogg, D. C., 81, 83
Hogg, D. E., 148, 161
Holin, S. A., 406
Hollinger, J. P., 271, 274, 282
Holmes, E. C. J., 96, 112, 114, 130
Holzberlein, T. M., 239
Höshi, R., 171, 188, 189, 190
Howard, W. E., 83
Howe, L. L., 232, 233, 236
Hoyle, F., 1, 3, 6, 171, 172, 186, 188, 189, 276, 316, 318, 322, 324, 342, 343, 344, 345, 361, 412, 421
Huang, S.-S., 35-56; 36, 39, 40, 42, 43, 44, 45, 46, 47, 48, 49, 51, 52, 53, 54, 55, 172
Huizenga, J. R., 418
Hujer, C., 342, 344
Hull, T. E., 12
Hunger, K., 4, 5, 299
Hunter, A., 344
Hunziker, W., 9
Hvatum, H., 80, 81, 86, 87, 93
Hynek, J. A., 36

I

Ianna, P. A., 60
Iben, I., Jr., 171, 189, 190, 383, 387, 388, 448
Ikaunieks, J. J., 26
Ionescu, T. V., 214
Ireland, J. G., 276
Iriarte, B., 194, 195, 199, 299, 441, 448, 449
Iwanowska, W., 31

J

Jackson, C., 342, 343, 344, 345, 346
Jacobsen, C., 315
Jacobson, A. S., 417
Jacobson, T. V., 14
James, H. M., 211, 213, 217, 219
James, T. C., 213, 217, 219
Jarzebowski, T., 307, 309, 320, 342, 343, 344, 345, 346
Jaschek, C., 36, 300, 304, 305, 320, 325, 340, 341, 342, 343, 344, 345, 346
Jaschek, M., 36, 300, 304, 305, 320, 325, 340, 341, 342, 343, 344, 345, 346
Jaschek-Corvalan, M., 305, 340, 342, 343, 344, 345
Jefferies, J. T., 5
Jeffers, H. M., 46
Jefferys, W. H., 64
Jenkins, F. A., 209
Jenkins, L. F., 57, 58, 67, 72, 73, 201
Jennison, R. C., 146, 147, 152
Jensen, C., 321
Jensen, E., 316, 318
Johnson, H. L., 193-206; 19, 22, 190, 194, 195, 196, 197, 198, 199, 202, 203, 303, 343, 344, 345, 441, 445, 448, 449, 462, 468
Johnson, H. M., 116, 120, 122, 158
Johnson, J. R., 43
Johnson, M. H., 410, 414
Jones, H. S., 58
Joy, A. H., 38, 45
Jugaku, J., 4, 5, 9, 299, 300, 301, 302, 342, 343, 344, 345
Jull, E. V., 80, 81, 83
Jünger, H. O., 235

K

Kahn, F. D., 172, 226
Kaidanovskii, N. L., 146, 152, 156
Kalkofen, W., 452
Kamijo, F., 353
Kandel, R., 5, 6
Kapteyn, J. C., 57
Kardashev, N. S., 166
Keenan, P. C., 8, 9, 12, 23, 24, 28, 29, 30, 31, 303, 340, 342, 343, 344, 345, 456, 468, 469
Kegel, W. H., 4, 9
Kellermann, K. I., 152, 162, 253
Kellman, E., 303, 340, 342, 343, 344, 345, 456
Kelsall, T., 448, 452, 457, 462, 467
Kenderdine, S., 92
Kennedy, P. M., 107, 120, 301, 343
Kerr, F. J., 96, 112, 124, 125, 126, 128, 130, 141, 274
Khalatnikov, I. M., 428
Kholodilov, N. N., 80
Kholopov, P. N., 33, 158
Khvostenko, V. I., 214
Kienle, H., 320, 344
Kiepenheuer, K. O., 245, 293
Kiess, C. C., 215, 216, 220
Kiess, H. K., 215, 216, 220
King, D. S., 359, 366, 367, 368, 369, 371, 379, 381, 382
King, I., 199, 342
Kinman, T. D., 28
Kippenhahn, R., 322, 354, 355, 357, 358, 361, 364, 365, 366, 367, 368, 369, 371, 373, 375, 376, 377, 379, 380, 381, 383, 388
Kirzhnits, D. A., 419
Klemola, A. R., 11
Klemperer, W., 213, 217, 219
Knaap, H. F. P., 225
Knuckles, C. F., 196
Kodaira, K., 4, 9
Koehler, J. A., 167
Kohl, K., 4
Kohl, O., 340
Kolos, W., 211, 213
Kondo, M., 8
Konig, A., 63
Kopal, Z., 36, 38, 43, 48, 51, 52, 322
Kopecky, M., 317
Korchak, A. A., 254, 271
Kothari, D. S., 315
Kovar, R., 29
Kraft, R. P., 27, 36, 451, 462, 467
Krause, L. C., 88

Krishnan, T., 146, 152, 156, 161
Kristian, J., 315
Kron, G. E., 19, 21, 134, 195, 198, 201, 299, 301, 343
Krook, M., 4, 321
Kruskal, M. D., 418
Kruszewski, A., 52
Kubiak, M., 21
Kuhi, L. V., 191, 391
Kuiper, G. P., 19, 22, 37, 38, 43, 46, 48, 202, 215, 220
Kukarkin, B. V., 25, 394
Kulsrud, R. M., 418
Kumar, S. S., 171, 189, 190
Künzel, H., 320
Kuz'min, A. D., 166, 271

L

Labrum, N. R., 146, 161
Laird, M. J., 317
Lambrecht, H., 225
Land, G., 61, 62, 64
Lane, J. A., 86
Larson, R. B., 468
Larsson, H. J., 450, 451
Lassettre, E. N., 212
Lastochkin, V. P., 80
Latham, V., 147, 152
La Tourrette, J. T., 238
Layzer, D., 321
Leavitt, H. S., 99, 130
Lebovitz, N. R., 323, 353
Ledoux, P., 293-352; 321, 322, 323, 324, 353, 356, 360, 371, 388
Ledsham, K., 214
Lee, E. K., 14
Lee, O. J., 71
Leighton, R. B., 203
LeLevier, R., 190
Lequeux, J., 148, 152, 156, 161, 166, 270
Le Roux, E., 161, 250, 270
Leslie, P. R. R., 161
Lessman, W., 239
Levée, R. D., 190
Lichten, W., 212, 227, 238
Lifshitz, E. M., 428
Lilley, A. E., 88
Limber, D. N., 52, 203, 322
Lin, C. C., 428
Lin, Y.-T., 36
Lindberg, L., 315
Lindsay, E. M., 111, 117, 134
Lippincott, S. L., 61, 65
Little, A. G., 146, 152, 156
Loughhead, R. E., 293, 298, 306, 315
Lourens, J. v. B., 19, 24, 32
Low, F. J., 19, 22, 193, 194, 195, 203
Lowes, J. G., 314
Ludendorff, H., 340, 342, 343, 344
Lundquist, S., 315
Lüst, R., 313, 315, 322
Luyten, W. J., 65, 71, 72, 74
Lynden-Bell, D., 10, 11
Lynds, C. R., 164
Lyngå, G., 101, 136, 137

M

McClain, E. F., 151, 265, 274, 277, 279
McCrea, W. H., 225, 231
McCullough, T. P., 245, 270, 271, 273, 274, 277, 281
McDaniel, E. W., 215
McGee, R. X., 96, 101, 112, 113, 114, 115, 116, 118, 125, 126, 127, 128, 130
McKellar, A., 38
Mackey, M. B., 256, 269, 270, 272, 274, 277, 279
McNally, D., 225, 231
McNamara, D. H., 45, 51, 450, 451, 452, 460
MacRae, D. A., 80, 87
Maestre, L. A., 342, 343, 344
Maltby, P., 147, 148, 151, 152, 153, 154, 155, 156, 161, 253, 274, 277, 279, 285
Malville, J. M., 226, 227
Mander, J., 433, 441, 450, 459
Manley, O. P., 418
Maran, S. P., 83
Martin, D. W., 215
Martz, D. E., 203
Mathèwe, L., 49
Mathewson, D. S., 118, 119, 122, 123, 263, 265, 268, 269, 274
Mathis, J. S., 121
Matsushima, S., 222
Matthews, T. A., 153, 154, 155, 156, 161, 162, 253, 279, 282, 287
Maunsell, C. D., 340, 342, 343, 344, 345, 346
Mawridis, L., 307, 343
May, M. M., 409
Mayer, C. H., 245, 270, 271, 273, 274, 277, 281, 282
Mayer, M. G., 412
Meadows, A. J., 304, 317, 343, 345
Medd, W. J., 80, 81
Meeks, M. L., 88, 215, 246
Meinel, A. B., 223, 434
Meltzer, A., 8, 9, 469
Meltzer, D. W., 423, 424
Memory, D. J., 322
Mendoza V., E. E., 19, 22, 195, 196, 203, 446
Mennella, R. A., 271, 274, 282
Menzel, D. H., 321
Merchant, A. E., 14
Merrill, P. W., 21, 24, 25, 26, 29, 30, 31, 293, 303, 345
Mestel, L., 312, 313, 316, 320, 428, 451
Metzger, P. H., 239
Mezger, P. G., 79, 80, 82, 88, 91, 166, 271
Miczaika, G. R., 303, 342, 343, 344, 345
Mihalas, D., 4, 203, 361, 440, 443, 449, 452, 454, 462
Miller, J. A., 58
Mills, B. Y., 122, 123
Milne, D. K., 265, 268, 272, 274
Milton, J. A., 101, 113, 115, 116
Minkowski, R., 145, 149, 154, 155, 157, 161, 162, 411
Minnaert, M., 293
Minnett, H. C., 281, 284
Misner, C. W., 406, 408
Mitchell, R. I., 51, 194, 195, 199, 441, 448, 449
Mitchell, S. A., 58
Mizushima, M., 238
Moffet, A. T., 145-70; 146, 147, 148, 152, 153, 154, 155, 156, 161, 167, 253, 284, 285
Monfils, A., 233, 236
Moore, A. F., 314
Moore, E., 171, 189
Moore, J. H., 340, 342, 343, 344, 345
Morgan, W. W., 154, 155, 156, 162, 196, 279, 282, 300, 303, 306, 307, 340, 341, 342, 343, 344, 345,

346, 434, 443, 445, 456, 462
Morris, D., 147, 151, 265, 266, 268, 270, 271, 274, 277, 279, 281, 282, 284, 285, 287, 289
Morrison, P., 413, 414, 418
Morton, D. C., 36, 203, 231, 415
Mowat, M., 117
Mullan, D. J., 111
Muller, C. A., 264, 265, 267, 268, 269, 274
Müller, E. A., 5, 6, 220
Münch, G., 203, 216
Münch, L., 343, 344
Murray, B. C., 194, 195, 221
Mutschlecner, J. P., 5, 6
Myers, G. W., 37

N

Nail, V. McK., 105, 135
Nakano, T., 171, 172, 180, 181, 182, 184, 188, 189, 190
Namioka, T., 236
Nandy, K., 436
Narlikar, J. V., 421
Nassau, J. J., 340, 342, 343, 344, 345, 346, 445
Ness, N., 418
Neubauer, F. J., 51, 340, 342, 343, 344, 345
Neugebauer, G., 203
Neville, A. C., 148, 150, 272, 282
Newburn, R. L., Jr., 19, 22, 223
Nicholls, R. W., 212, 214, 230, 240
Nicholson, S. B., 19, 24, 193, 194, 202
Nikonow, W. B., 344
Nishimura, S., 175, 176, 178, 227, 228, 231
Novikov, I. D., 394, 404, 428

O

Oda, M., 414, 415, 418
O'Dell, C. R., 417
Ohm, E. A., 80
Ohmura, H., 188, 240
Ohmura, T., 188, 240
Ohyama, N., 414
Oke, J. B., 382, 391
Okoye, S. E., 418
Olsen, K. H., 359, 366, 367, 368, 369, 371, 379, 381, 382
Ono, Y., 414
Oort, J. H., 7, 28, 245, 269, 271, 411, 416, 418
Oosterhoff, P. Th., 371, 373
Öpik, E. J., 21, 219, 220, 221
Öpik, U., 239, 240
Oppenheimer, J. R., 429
Orszag, S. A., 415
Osawa, K., 203, 340, 342, 343, 344, 345, 449
Osmer, P. S., 450
Osterbrock, D. E., 154, 161, 227, 230, 231, 276, 313
Ostriker, J. P., 376
Osvalds, V., 23, 24, 26
Owen, T. C., 220

P

Pacholczyk, A. G., 166
Paczynski, B., 374, 390
Pagel, B. E. J., 2, 3, 4, 5, 6, 7, 8, 9, 11, 13
Palmer, H. P., 147, 148, 152, 161, 265, 270
Paolini, F. R., 415
Paraskevopoulos, J. S., 134
Parenago, P. P., 70, 73
Pariiskii, Yu. N., 146, 152, 156, 161, 270
Parker, E. N., 315, 316, 317
Parker, R., 8, 9, 11
Patch, R. W., 212
Pauliny-Toth, I. I. K., 92, 264, 267
Pawsey, J. L., 77, 248, 267
Payten, W. J., 146, 161
Pearce, J. A., 340, 343, 344
Pecker, J. C., 2, 4, 5, 6
Peebles, P. J. E., 92, 220
Peek, J. M., 212
Pekeris, C. L., 356
Pelling, R. M., 417
Penrose, R., 428
Penzias, A. A., 86, 92
Percy, J. R., 376
Perek, L., 128
Perry, C., 346, 436, 459, 461, 462, 463, 464
Peterson, B. A., 167
Peterson, L. E., 417
Petrie, R. M., 305, 340, 342, 343, 344, 345, 346, 441, 442, 450
Pettit, E., 19, 24, 193, 194, 202
Phillipson, P. E., 212
Piddington, J. H., 122, 163, 287
Pikel'ner, S. B., 166
Plaut, L., 49, 325
Plavec, M., 52
Plumpton, C., 312, 321, 322
Podurets, M. A., 408
Poll, J. D., 209, 240
Poots, G., 214, 240
Popper, D. M., 11, 201, 202, 452
Porfer'iev, V. A., 80
Prager, R., 306, 343, 344
Prendergast, K. H., 39, 315
Preston, G. W., 8, 9, 26, 27, 28, 29, 374, 390
Price, R. M., 146, 151, 156, 157, 159, 245, 274, 279, 281, 282, 284, 289
Provin, S. S., 303, 304, 307, 309, 342, 343, 344, 345, 346
Prozorov, V. A., 146, 152, 156, 270
Przybylski, A., 110, 301, 343, 344
Pugh, J. F., 92

Q

Quinn, W. E., 238

R

Rabinowitz, I. N., 363
Radhakrishnan, V., 151, 265, 266, 270, 271, 274, 277, 279, 281, 282, 284
Raich, J. C., 213
Rakos, K. D., 307, 309, 342, 343, 344, 345, 346
Ramana, K. V. V., 80, 81
Ramsey, N. F., 238
Rank, D. H., 213, 215, 217, 218, 219, 232, 233
Rao, B. S., 213, 217, 232, 233
Razin, V. A., 263, 267
Reddish, V. C., 147
Redman, R. O., 434, 435, 469, 470
Reeves, H., 13
Renson, P., 293-352; 299, 300, 305, 306, 308, 309, 317, 318, 319, 320, 324, 325, 340, 341, 342, 343, 344, 345, 346
Richardson, O., 238
Richtmyer, R. D., 359
Riddle, Ph., 343
Risley, A. M., 23, 24, 26
Roberts, J. A., 248

Roberts, M., 383, 384, 390
Robinson, B. J., 89, 112, 124, 125, 167
Rodgers, A. W., 8, 110, 111, 117, 134
Rogers, A. E. E., 246
Roll, P. G., 92
Roman, N. G., 299, 342, 343, 344, 345, 464
Roothaan, C. C. J., 211, 213
Rose, W. K., 19, 21, 151, 199, 223, 265, 274, 277, 279
Ross, J. E., 449, 452
Rossi, B. B., 414, 415, 418
Rossi, L., 414, 415, 417
Rountree, J. C., 5, 6
Rowson, B., 147, 161
Roxburgh, I. W., 316, 451
Roy, A. E., 451
Runcorn, S. K., 314, 321
Ryle, M., 147, 148, 149, 155, 265, 270, 272, 282

S

Saakyan, G. S., 400, 404, 406, 407, 419
Sackmann, I. J., 466, 470
Sahade, J., 36, 38, 43, 46, 51, 342
Sakashita, S., 190, 414
Salpeter, E. E., 167, 176, 207, 209, 224, 225, 226, 227, 230, 239, 429
Sandage, A. R., 10, 11, 46, 139, 140, 148, 154, 157, 160, 163, 164, 383, 384, 387, 390, 467, 468
Sanwal, N. B., 439, 441, 449
Sargent, W. L. W., 1, 3, 15, 299, 300, 301, 302, 304, 318, 342, 343, 344, 345, 346, 456
Sartori, L., 413, 414, 418
Saunders, J., 383, 384, 387
Schalén, C., 343, 344, 345
Schatzman, E., 2, 3, 175, 176, 313
Schawlow, A. L., 237
Schelkunoff, S. A., 80
Scheuer, P. A. G., 147
Schilt, J., 65, 67, 68, 71, 72, 74, 303, 342, 343, 344, 345, 346
Schlesinger, F., 57, 58, 61, 62, 63, 64, 65, 66, 68, 343
Schlüter, A., 313, 315, 322
Schmidt, K.-H., 225
Schmidt, M., 27, 150, 153, 154, 155, 156, 161, 162, 279, 282
Schmidt-Kahler, T., 446
Schoenberg, M., 419
Schwarzschild, B., 8, 9, 469
Schwarzschild, M., 8, 9, 19, 21, 186, 199, 223, 295, 298, 302, 321, 361, 371, 372, 373, 374, 376, 383, 451, 469
Scott, P. F., 89
Scott Smith, T., 312
Seaquist, E. R., 80, 87
Searle, L., 8, 9, 160, 289, 300, 301, 304, 318, 342, 343, 344, 345, 346, 382, 469
Sears, F. H., 295
Sears, R. L., 14, 191
Seaton, M. J., 175, 176
Seeger, C. L., 80, 87, 245, 249, 267, 268
Seeger, P. A., 12, 412
Seielstad, G. A., 151, 265, 266, 270, 271, 274, 277, 279, 281, 282, 284
Semplak, R. A., 80
Sersic, J. L., 106
Shain, C. A., 122, 151
Shajn, G., 49
Shakeshaft, J. R., 92, 264, 265, 267
Shakhovskoj, N. M., 299, 343, 345, 346
Shapley, H., 105, 134, 135
Sharp, D. H., 408
Sharpless, S., 449
Shavitt, I., 230
Sheridan, K. V., 151
Shimizu, M., 239
Shklovsky, I. S., 145, 158, 165, 411, 412, 416, 418, 245, 272
Shu, F. H., 428
Shull, H., 212
Shuster, A., 314
Silver, S., 83
Simon, R., 322
Sinclair, M. W., 113, 117, 124
Sinton, W. M., 19, 22
Sinvhal, S. D., 439, 441, 449
Sitaram, P., 213, 217, 232, 233
Skumanich, A., 467
Slater, J. C., 211
Slayton, W. T., 80
Slee, O. B., 122, 147
Slettebak, A., 299, 300, 305, 340, 342, 343, 344, 345, 346
Sloanaker, R. M., 151, 245, 265, 270, 271, 273, 274, 277, 279, 281
Slocum, F., 58
Slomba, A. F., 213, 217, 232, 233
Smak, J. I., 19–34; 19, 21, 22, 23, 24, 25, 26, 27, 28, 30, 31, 33, 374
Smerd, S. F., 150
Smeyers, P., 322
Smith, E. van P., 274
Smith, F. G., 87, 265, 270
Smith, L. F., 110, 124
Snell, W. W., 80
Snyder, H., 429
Soboleva, N. S., 151, 270, 282, 284, 285
Solomon, P. M., 222, 226, 230, 240
Somerville, W. B., 207–44; 223, 238, 240
Soshnikov, V. N., 223, 240
Spinrad, H., 19, 22, 32, 215, 216, 217, 219, 220, 222, 223
Spitzer, L., Jr., 172, 175, 176, 207, 208, 213, 225, 228, 230, 276, 312, 313, 320, 344
Stankevich, K. S., 80
Stawikowski, A., 343, 344, 345
Stebbins, J., 19, 21, 195, 344, 345, 346
Stecher, T. P., 219, 220, 222, 223
Steinitz, R., 306, 307, 319, 323, 341, 342, 343, 344, 345
Steinmetz, D., 194, 203
Stelzried, C. T., 84, 85, 86
Stepanov, V. E., 302
Stewart, A. L., 214, 240
Stewart, J. N., 364, 366
Stibbs, D. W. N., 295, 298, 302, 319, 343, 344
Stobie, R. S., 376
Stoicheff, B. P., 232, 233
Stothers, R., 353
Straiton, A. W., 80, 88
Strand, K. Aa., 61, 72, 201
Strassl, H., 271
Strom, S. E., 203, 452, 462
Strömgren, B., 433–72; 6, 48, 199, 207, 317, 433, 435, 436, 438, 439, 440,

442, 443, 444, 447, 448, 449, 452, 454, 456, 457, 459, 460, 461, 462, 463, 464, 465, 466, 468
Struve, O., 36, 37, 38, 42, 43, 44, 45, 46, 48, 49, 50, 51, 54, 163, 303, 307, 308, 317, 340, 341, 342, 343, 344, 345, 346
Sturrock, P. A., 163
Sugimoto, D., 171, 188, 189, 190
Surdin, M., 415
Swann, W. F. G., 314
Swarup, G., 146, 152, 156
Sweet, P. A., 313, 316, 322, 451
Swensson, J. W., 343
Swings, P., 49, 307, 308, 317, 340, 342, 343, 344, 345
Syrovatskii, S. I., 150, 166, 250, 253, 254, 271

T

Tai, W. S., 344
Takakura, T., 250
Takayanagi, K., 175, 176, 178, 227, 228, 231
Tamburini, T., 296, 302, 342, 343, 344, 345, 346
Tanaka, Y., 190, 234
Taylor, H. S., 214, 215
Tchugainov, P. F., 345
Teller, E., 412
Temesváry, S., 172
Terashita, Y., 222
Teska, T. M., 219
Thackeray, A. D., 31, 105, 107, 108, 109, 110, 125, 126, 128, 138
Thiessen, G., 298, 343, 344
Thomas, R. N., 5
Thompson, A. R., 146, 147, 152, 156, 265, 270
Thompson, J. M., 267
Thorne, K. S., 298, 343, 393, 394, 398, 402, 404, 405, 406, 407, 408, 423, 424, 427
Tifft, W. G., 24, 106, 138
Timofeeva, G. M., 146, 151, 152, 161, 282
Tinbergen, J., 245, 249, 264, 265, 267, 268, 269, 274
Tolbert, C. W., 80, 88
Tonking, F. G., 281, 284
Townes, C. H., 237
Trafton, L. M., 209, 216, 220, 222
Traving, G., 4
Treanor, P. J., 317, 342
Trembath, C. L., 86
Trent, G. H., 122
Troitsky, V. S., 80, 81, 82, 91
Tseitlin, N. M., 80, 81, 82, 91
Tsuji, T., 342, 343
Tsuruta, S., 406, 407, 415, 419, 420, 421
Tucker, W. H., 414, 416, 418
Turtle, A. J., 92
Twiss, R. Q., 152, 156, 201

U

Udal'tsov, V. A., 270, 271
Ulam, S. M., 163
Unno, W., 355, 356, 358, 359, 365, 369, 383
Unsöld, A., 1, 2, 3, 12, 218, 343, 344
Upson, W. L., III, 230

V

van Damme, K. J., 167
van de Hulst, H. C., 176, 194, 207, 224, 225
van de Kamp, P., 65, 71, 72, 74
Van den Bergh, S., 434, 466, 470
Van Den Heuvel, E. P. J., 317
Van den Meijdenberg, C. J. N., 225
Van der Borght, R., 322
van der Laan, H., 166
van Genderen, A. M., 341
van Herk, G., 28
van Kranendonk, J., 209, 240
van Maanen, A., 58, 64, 74
Van't Veer-Menneret, C., 5
Van Vleck, J. H., 88
Vardanjan, R. A., 299
Vardya, M. S., 221, 222, 223, 241
Vartanyan, Yu. L., 407
Vasilevskis, S., 57-76
Vernon, P., 148
Verschuur, G. J., 271, 274
Visvanathan, N., 122
Vitense, E., 189, 361, 364, 380
Vogel, L., 5, 6
von Hoerner, S., 172

W

Wacks, M. E., 239
Wada, M., 414, 415, 418
Waddington, C. J., 220
Wade, C., Jr., 39
Wade, C. M., 151, 154, 159
Wagoner, R. V., 163
Wakano, M., 393, 394, 402, 404, 405, 406, 407, 408, 427
Walden, W. E., 163
Waldmeier, M., 321
Walker, M. F., 190
Wallerstein, G., 2, 4, 7, 8, 9, 10, 11, 12, 13, 14, 191, 344, 464, 469
Walraven, J. H., 107, 436, 442, 453
Walraven, T., 107, 245, 269, 271, 321, 323, 353, 371, 388, 411, 416, 418, 434, 436, 442, 453
Walther, M. E., 299, 342
Waltman, W. B., 80, 81, 86, 87, 93
Wan Fook Sun, 322
Warner, B., 2, 5, 6, 8, 9, 12
Warwick, J. W., 298, 343
Waters, J. R., 414, 415, 418
Weaver, H. F., 343
Weber, J., 426
Webster, B. L., 125, 127
Weersma, H. A., 57
Wehlau, W., 343, 344, 345
Weigert, A., 189, 388
Weinreb, S., 246
Weiss, A. A., 150
Weiss, N. O., 313
Wells, H. W., 88
Wells, J. S., 86
Welsh, H. L., 219
Wendker, H., 79, 80, 82, 88, 166, 271
Wentzel, D. G., 315, 345
Wesselink, A. J., 105, 107, 108, 109, 121, 125, 126, 128, 138
Westerhout, G., 80, 245, 249, 267, 268, 270, 271
Westerlund, B. E., 96, 101, 108, 110, 111, 122, 123, 124, 125, 126, 131, 132, 134, 435
Westfold, K. C., 246, 250, 251
Westgate, C., 340, 341, 342, 343, 344, 345, 346
Westphal, J. A., 221
Weymann, R., 14, 45, 171,

189, 191
Wheeler, J. A., 393-432; 393, 394, 396, 402, 404, 405, 406, 407, 408, 421, 423, 424, 426, 427
White, R. H., 408, 409, 410, 414, 418
White, W. D., 84
Whiteoak, J. B., 245-92; 150, 245, 271, 272, 273, 274, 277, 279, 281, 282, 284
Whitford, A. E., 19, 21, 193, 194, 344, 345, 346, 436, 445
Whitney, C., 363, 377
Wielebinski, R., 93, 264, 265, 267
Wild, J. P., 150
Wildey, R. L., 194, 195, 221
Wildt, R., 209, 222
Wiggins, T. A., 213, 217, 218, 219, 232, 233
Wigner, E. P., 213
Wilkinson, D. T., 92
Williams, D. A., 209, 240, 241
Williams, P. J. S., 161
Wills, D., 89
Wilson, H. A., 314
Wilson, O. C., 467, 469
Wilson, R. E., 25, 124, 340, 341, 342, 343, 344, 345, 346
Wilson, R. W., 81, 83, 92, 271, 274
Wisniewski, W. Z., 203
Wolf, R. A., 419, 420
Wolf, S. C., 11
Wolstencroft, R. D., 122
Woltjer, L., 163, 256, 270, 286, 315, 322, 411, 416, 422
Wood, F. B., 37
Wood, H. J., 343, 345
Woolf, N. J., 19, 21, 46, 199, 223, 414, 429
Woolley, R. v. d. R., 109, 132, 134, 140
Worley, C. E., 201
Wright, J. P., 421
Wright, K. O., 14
Wright, W. H., 293
Wrubel, M. H., 312, 451, 452
Wurm, K., 344
Wyndham, J., 148
Wyse, A. B., 38, 45

Y

Yabsley, D. E., 281, 284
Yates, K. W., 93

Z

Zabriskie, F. R., 215, 216, 230
Zakharenkov, V. F., 146, 152, 156
Zapolsky, H. S., 406
Zebergs, V., 46, 51, 163
Zee, A., 423, 424, 426
Zel'dovich, Ya. B., 394, 400, 404, 407, 421, 428
Zhevakin, S. A., 322, 354, 363, 367, 377, 378, 380
Zimmerman, B. A., 12
Zwaan, C., 222
Zwicky, F., 208, 224, 231, 412, 429

SUBJECT INDEX

A

Abell 2199, 154
Aberration
  annual, 57
  in parallax measurements, 61
Absolute calibration
  in infrared, 199, 201
Absolute intensity calibrations
  in radio astronomy, 77-94
    accuracy, 91-93
    measurement of flux densities for small-diameter sources, 77-89
    measurement of sky brightness, 89-91
Absolute magnitude
  calibration, 441-43
  for long-period variables, 22, 23-25
  photographic
    Virgo A, 155
Absolute magnitude effects, 463
Absolute parallax, 59
  reduction to, 68-76
Absolute standards
  of noise power, 84-87
Absorption
  total
    in long-period variables, 22
  see also Interstellar absorption; Overlying absorption; Translational absorption
Absorption bands
  in observing long-period variables, 22
Absorption coefficient
  atmospheric, 4, 22
  radio-wavelength, 83
Absorption cross section
  of grains, 177
  H_2, 217
Absorption lines
  in galaxies, 155, 157-58, 160
Absorption-line blanketing, 465
  see also Line blanketing
Absorption-line spectrophotometry, 445
Absorption-line velocities, 29
Abt-Golson technique, 446
Abundance anomalies
  magnetic stars, 302
Abundances
  from stellar spectra, 1-17
  in Magellanic Clouds, 119-21
Accuracy
  parallax measurements, 57-76
Acoustic energy
  in pulsation theory, 365
AD 185, 272
AD 1006, 272
Adiabatic collision, 225
Adiabatic compression, 357
Adiabatic contraction, 175, 180
Adiabatic effects
  in pulsation theory, 356
Adiabatic expansion
  radio galaxies, 165, 167
Adiabatic exponent, 172, 182
Adiabatic free fall, 181
Adiabatic oscillations
  in close binary systems, 50
Adiabatic pulsation theory
  linear, 355-57
Adiabatic temperature gradient
  in protostars, 185, 188
  in pulsating variables, 377
ADS 94 A
  see α And
ADS 1507 A
  see γ Ari
ADS 1615 A, 328
ADS 1860 A
  see ι Cas A
ADS 4566 A
  see θ Aur
ADS 8568 A, 332
ADS 8568 B, 332
ADS 8630 B
  see γ Vir
ADS 8706 A
  see α^2 CVn
ADS 9338 A, 334
ADS 9338 B, 334
ADS 10054 A
  see ω Her
ADS 12182
  see 21 Aql
ADS 14702 A
  see γ Equ
ADS 16252 B, 310
Age
  of H_2 molecules, 226
  and Magellanic Clouds, 134
  of radio galaxies, 164, 287
  of stars, 10, 14, 457-58, 467
    variable stars, 33
AG Peg 297, 305
AI Velorum, 374
Albedo
  see Ultraviolet albedo; Visual albedo
Alfvén velocity, 165, 316
Algol-type eclipsing binaries, 38, 40
Alpha particles, 318
Altazimuth mountings, 265
Aluminum
  in stars, 12, 308
Ambient temperature
  of antenna, 81
American Association of Variable Star Observers, 19
Amplification factor, 307
Amplitude
  visibility, 148
Am stars
  abundances, 2
α And, 304, 307
δ And, 8
14 And, 9
Andromeda
  distance to, 98
Angular momentum dissipation
  in close binaries, 36
Angular momentum transfer
  in close binary systems, 35-56
    gaseous flow, 36-49
Angular size
  of radio sources, 77
Anharmonicity, 319
Anharmonic variation curves, 309
Anisotropy
  diffusion, 298
Annual aberration, 57
Annual proper motion
  in Magellanic Clouds, 109
  see also Proper motion
Antennas
  radio, 77, 78
    collecting area, 78-84

gain, 79-84
polarization, 79
temperature, 89-90
see also Effective area
Aperture blocking
in radio astronomy, 83
Aperture efficiency, 91
Apsidal line, 324
Ap stars, 305
abundances, 2
see also Magnetic stars; Metallic-line stars
AP Vel, 374
γ Aql, 9
η Aql, 388
10 Aql, 338
21 Aql, 301
AQ Peg, 42
ι^3 Aqr, 108, 340
Arcturus, 3
Area
of antenna
see Effective area
Argon
in gas discharge tube, 84
γ Ari, 310
56 Ari, 307, 309, 310, 319
Association
of H_2 molecules
time-scale, 226
Associations
in Magellanic Clouds, 98, 109, 110, 121, 131-34
see also Galactic clusters
A stars
abundances, 1
atmospheres, 15, 47
infrared observations, 195
in Magellanic Clouds, 109, 110
peculiar, 293
spectral classification, 453-62
Astigmatism
in parallax measurements, 61
Astrographic catalogue, 61
Astrometric reflector
in parallax measurements, 72
Astrometry, 59, 61
Asymmetric profiles, 303
Asymptotic gamma
in superdense stars, 406
Asymptotic pulsation amplitude, 359
Atmospheres
stellar
abundances, 1
close binary systems, 40
see also Convective atmospheres; Isothermal atmospheres; Planetary atmospheres; Protostars
Atmospheric attenuation
of radio signals, 79, 88
Atmospheric dispersion
in parallax measurements, 60
Atmospheric limit, 199
Atmospheric reversal, 6
Atmospheric transparency, 435
Atmospheric turbulence, 465
Atmospheric window
infrared, 194
Atomic exchange reaction, 230
Atomic nucleus
density, 395
Attenuation
of signals
in radio astronomy, 79, 88
see also Extinction
Augmentation
of mass, 402
β Aur, 201, 202
ϵ Aur, 48
θ Aur, 304
ι Aur, 8
λ Aur, 8
27o Aur, 330
χ Aur, 8
ξ Aur, 456
56 Aur, 8
Automatic guiding
in parallax measurements, 72
A3 V, 203
A9 V, 203
Available power
in radio astronomy, 77, 78
Axes of rotation
of Magellanic Clouds, 129
of radio galaxies, 289
Axial rotation
of binary components, 49-54
Azimuthal magnetic fields, 314

B

Ba II
in stars, 299
in long-period variables, 31
Background polarization
galactic, 267-69
Back lobes
of antenna, 92
Baker-Kippenhahn program
in pulsation theory, 365
Balance
of energy
in protostars, 172
Balmer discontinuity index, 436, 438, 458
Balmer jump, 5, 303
Balmer lines, 5
Balmer maximum, 440, 458
Balmer series, 305
Bandwidth modulation, 263
Bandwidths
for examining long-period variables, 29
in radio astronomy, 77, 84, 89
Bar
of Large Magellanic Cloud, 97, 111, 116
of Small Magellanic Cloud, 98
Barium
in stars, 11, 300, 318
Barium stars, 1, 11, 12-13, 15, 299
Barnard 140, 9
Barred spiral structure
of Large Magellanic Cloud, 122
Barr effect, 37
Baryon number, 401
Baryons
mass, 399
in superdense stars, 394, 395
Barytropic fluid, 315
Baseline
for radio interferometer, 17
"BB fit," 203
Beam efficiency, 90-91
Beam ellipticity, 264
Beaming effect, 269
Beamwidth effect, 254, 261
Beamwidths
radio, 146
Beat phenomenon
in pulsation theory, 353
Bertiau, 201
Beryllium
in stars, 14, 132
spectral classification, 445
Beta activity, 410
Binary effect
in spectral classification, 447, 449
Binary star hypothesis, 324, 325
Binary systems
see Close binary systems
Bipolar fields, 320
Black-body model
for long-period variables, 19, 21
Black dwarfs, 190

Blending
of spectral lines, 215, 216
Blinker comparator, 429
Blue magnitudes
for long-period variables, 23
see also Photographic magnitude
Blue supergiants
in Magellanic Clouds, 124
Bohr magneton, 237
Bolometer, 193
Bolometric corrections, 193, 195, 205
for long-period variables, 19-23
for superdense stars, 394
Boltzmann constant, 78
Boltzmann population, 228
α Boo, 9, 202
ι Boo, 9
λ Boo, 456, 457
π Boo, 305
29 π1 Boo, 334
29 π2 Boo, 334
σ Boo, 203
ξ Boo A, 9
Borgman-Blaauw method
of spectral classification, 453
Boron
in protostars, 191
Boss 1985, 305
Bottlinger diagram, 10
Bounce
of core
in protostars, 181-83
of neutron core
in superdense stars, 409
Boundary conditions
in close binary problems, 39
in pulsation theory, 356, 359, 363, 365
Bound-free transitions, 223
in long-period variables, 21
Bounding radius
of superdense stars, 400
Bridge
emission
at radio wavelengths, 152
Brightness
maxima in
in long-period variables, 23
Brightness temperature, 51
of galaxies, 268
of sky, 89-91
Bright reversal
of calcium H and K lines, 467
see also Reversal
Broadening
of spectral lines
collisional, 218
rotational, 294
B stars
atmospheres, 4
infrared observations, 195
spectral classification, 438-53
supergiants
in Magellanic Clouds, 117
Buoyancy
of magnetic ropes, 316, 317
Buried fields, 316
B1.5 V, 203

C

3C 33, 151, 155, 160, 161, 163, 164, 285
3C 40, 164
3C 75, 164
3C 76.1, 151
3C 98, 151, 285
3C 103, 166
3C 111, 285
3C 212, 147
3C 219, 153, 285
3C 270, 151, 278, 284
3C 273, 278, 286
3C 278, 164
3C 279, 278, 285, 286
3C 295, 156, 161, 165
3C 310, 164
3C 338, 155
3C 353, 151, 284, 285
3C 403, 285
3C 442, 164
3C 452, 148, 150
Ca I
in long-period variables, 31
Ca II
H and K lines, 6
in long-period variables, 30, 31
Calcium
in stars, 12, 300
Calibration residuals, 444, 464
Calibrations
absolute intensity
in radio astronomy, 77-94
in abundance determinations, 10
in infrared observations, 199
53 Cam, 297, 298, 303, 307, 320
γ Cap, 304, 305
ξ Cap, 299, 340
Cape parallaxes, 58
Capture process
n-γ, 412
Carbon
in protostars, 175
in stars, 12, 13, 467
Carbon burning, 13
Carbon flash, 13
Carbon monoxide
in long-period variables, 22
Carina-Cygnus spiral arm, 274
Carinae, 110
Carinae Nebula, 120
Cas, 304, 305, 307, 310
43 Cas, 326
Cas A, 80, 81, 82, 272
Case a coupling, 210
Case system, 111
Cassegrain focus
60-inch reflector, 58
Catalyzed matter
cold, 395, 398, 404
Causality, 402
CC 209, 305
48 Cd, 187
in superdense stars, 394
Cell
see Irregularity cell; Lead sulfide cell
ω Cen, 33, 134, 136, 374, 384, 387
α Cen, 57
1 Cen, 332
3 k Cen A, 334
3 Cen A, 4, 300
Centaurus A, 146, 151, 155, 156-59
polarization in, 245, 274, 279-81
Center
of charge
of HD, 214
of gravity
of spectral line, 294
of Magellanic Clouds
see Geometrical center
of mass
of HD, 214
Center scale correction
in parallax measurements, 63
Centimeter wavelengths, 79
polarization, 245
studies of Magellanic Clouds, 101, 122, 150, 153
see also Hydrogen line--21 cm
Central condensation
in component stars
in binary systems, 37

in pulsation theory, 362
Central density
of protostar, 173, 180, 182
of superdense star, 393, 395, 398
Central optical depth, 219
Central system
of Large Magellanic Cloud, 97
of Small Magellanic Cloud, 98
Central temperature
of protostar, 181, 182
Centripetal acceleration, 250
δ Cephei, 353-54
Cepheid instability strip, 353, 355, 363, 368, 375, 376, 389
Cepheid intrinsic colors
infrared measurements, 191, 199
Cepheid pulsation, 354
Cepheid variables, 25, 27, 353
in Magellanic Clouds, 99, 105, 135
spectral classification, 467
β Cephei variables, 353, 354
Cerium
in stars, 300
Cerro-Tololo Inter-American Observatory, 434
κ Cet, 8
o Cet, 31, 32, 202, 203, 222
ξ Cet, 8
ϕ^2 Cet, 8
Characteristic frequencies
see Eigenfrequencies
Characteristic rate constant, 421
Characteristics
photomultiplier, 193
Characteristic times
in pulsation theory, 370
Charge dependence
of energy, 214
Chemical composition
infrared observations, 195
of Magellanic Clouds, 119-21
of protostars, 189
of stars, 1, 12, 461-62
of long-period variables, 31-32
Chemical-composition parameters
and spectral classification, 446-57
Chemical differentiation
in magnetic stars, 321
Chemical potential
of baryons
in superdense stars, 395
Chondrite meteorites
abundances, 13
Chromium
in Magellanic Cloud stars, 110
in stars, 12, 299, 300, 301, 319
and spectral classification, 445
Chromospheric abundances, 8
CH stars, 13
Circuits
in radio astronomy
see also Impedance
Circular analyzer
differential, 294
Circular frequency
of modes, 424
Circular polarization, 246, 251
Circulators
in radio astronomy, 86
Circulatory gaseous flow
in close binary systems, 36-49
Circumstellar absorption
in long-period variables, 32-33
in magnetic stars, 303
Classical Cepheids, 25, 27
in Magellanic Clouds, 135
Close binary systems, 35-56
axial rotation, 49-54
gaseous flow, 36-49
Closed universes, 402
Clouds
absorption by
at radio wavelengths, 88
Cloud structure
in Magellanic Clouds, 112
Clumping
of fields, 276
Cluster galaxies, 154, 155
Cluster parallaxes, 456, 460
Clusters
Magellanic Cloud, 113, 120, 126, 130-40
spectral classification by, 441-45
see also Associations; Globular clusters; Open clusters
Cluster variables, 383, 387
long-period, 33
Magellanic Cloud, 99
α CMa, 196, 201, 202, 203
α CMi, 8, 203
49 b Cnc, 332
76 κ Cnc, 332
ρ^2 Cnc, 8
69 ν Cnc, 332
15 Cnc, 330
Coarse analysis, 2, 5, 12
Coaxial mount
for gas discharge tube, 84
Cobalt
in stars, 300
Coefficient of continuous absorption, 4
Coefficient matrix
for normal equations
in parallax measurements, 63, 64
Cold catalyzed matter, 395, 398, 404
Cold impedance
in radio instrumentation, 86
Collapse
dynamics of, 407-10
of protostars, 133, 171
of superdense stars, 393
see also Contraction; Free-fall collapse
Collecting area
of radio antenna, 79-84
Collisional excitation
in protostars, 176
"Collisional narrowing," 218-19
Collision frequency, 249
Collision-induced transitions
dipole, 208
Collision processes
in close binary systems, 38
in protostars, 176
Color
in abundance determinations, 5
in long-period variables, 19-23
Color effect
in parallax measurements, 60, 63, 64, 74
Color excess
in long-period variables, 22
Color-excess scale, 454
Color index
calibration, 443, 459-60
in long-period variables, 23
in parallax measurements, 64
Color-magnitude diagrams
in long-period variables, 33
in Magellanic Clouds, 106, 109, 130, 139
Color-magnitude-period diagrams, 467
Color scale, 4
Color variation
in Mira stars, 19
β Com, 9

8 Com, 332
17 Com, 305
21 Com, 310
17 Com A, 332
17 Com B, 332
Coma
  in parallax measurements, 60, 74
Coma cluster
  and spectral classification, 465, 467
Compaction
  in superdense stars, 397, 406
Comparative intensity mean
  in radio astronomy, 77
Comparison stars
  for parallax measurements, 59, 63, 64
Component stars
  of close binary systems, 36, 37
Composite spectrum
  of binary stars, 305
Composition
  chemical
    of stars, 1
Composition discontinuity
  in pulsation theory, 355
Compound molecules
  in protostars, 176
Compressibility, 315
Compression
  adiabatic, 357
  radial
    of galactic magnetic field, 272
  stellar
    of superdense stars, 400, 401, 402
Compressional energy
  protostars, 232
Compressional mass-energy
  in superdense stars, 403
Compression phase
  of collisions, 225
Computers
  in pulsation theory, 359
  for reducing parallax measurements, 74
  in superdense star problems, 393
Concentration
  of heavy ions, 176
Condensation
  central
    in pulsation theory, 367
  of protostars, 172
Condensation process
  of protostars, 133
Conduction effects
  in parallax measurements, 60
Conservation laws
  of angular momentum
    in close binaries, 51
  of energy
    in protostars, 175
  see also Angular momentum transfer
Constant-amplitude pulsation, 391
Constellation I
  in Large Magellanic Cloud, 100, 118, 119, 120
Constellations
  in Magellanic Clouds, 97, 109, 118
Contact surface
  in close binary problems, 37, 43, 51
Contamination
  of spectral lines, 462
Continuous absorption coefficient, 4
Continuous ejection
  from stars, 6
Continuous-spectrum gradient, 438, 459
Continuum emission
  see Continuum measurements
Continuum energy, 5
  in long-period variables, 21, 30
Continuum measurements
  H+H, 223
  in radio astronomy, 89, 145
  of Magellanic Clouds, 98
Continuum processes
  in H_2, 239-41
    photoionization, 208, 239-40
    scattering, 240-41
Contraction
  condition, 171, 172
  gravitational
    in close binaries, 47
    in protostars, 233
  indicators
    in spectral classification, 448
  spherical, 313
  of superdense stars, 393
  see also Condensation; Free-fall collapse
Convective atmospheres, 221, 222
Convective core, 313
Convective energy transport
  in protostars, 186, 188
  in pulsation theory, 360-62
Convective structure
  of protostars, 185
Convective zone
  of star, 13, 14, 171, 313
Convergent spiral curves
  in superdense star problems, 398
Conversion loss
  in radio astronomy, 86
Convolution techniques
  in radio astronomy, 87, 147
Cooling
  of protostars, 173-75
    rates, 178-80
Cooling curve
  for superdense stars, 421
Cooling mechanisms
  for superdense stars, 419
Coordinates
  equatorial, 58
  rotating
    in close binary problems, 52
  standard
    in parallax measurements, 63
Copernican system, 57
Core
  bounce of
    in protostars, 181-83
  emission, 263
Core-and-halo structure, 284
  in radio sources, 148, 152, 155, 161
Corona
  in Magellanic Cloud stars, 110
  pulsating, 355, 358
Coronal abundances, 6
Coronal evaporation, 2
Correlation methods, 265-66
Cosmic dispersion, 6
Cosmic dust
  see Dust
Cosmic rays
  protostars, 172, 173, 174, 177
  solar, 220
  supernovae, 414
Cosmogony
  and hydrogen abundances, 215
Coudé dispersion, 7
Coudé spectrograph, 244
  observations of Magellanic Clouds, 110
Counterpressure
  of radiation
    in superdense stars, 422
Counts
  of galaxies, 121
Coupling
  rotational, 353
Coupling schemes
  for angular momentum, 212
  see also Hund's case a; Russell-Saunders
Cr I
  in stars, 306
    in long-period variables, 31

Cr II
in stars, 306
Crab Nebula
polarization, 245, 257, 269-72, 277, 286
superdense stars, 410-14
β CrB, 297, 300, 304, 459
14 ι CrB, 336
ρ CrB, 9
Critical A, 403
Critical baryon number, 405
Critical frequency, 249
Critical Heaviside value, 422
Critical mass
of superdense stars, 393, 395
Critical point
for protostars, 180
for superdense stars, 396
Critical temperature
in protostars, 185
Crossover effect, 309, 319, 320, 321
Cross-polarization lobes, 266
Cross section
for neutron capture, 13
see also Absorption cross section; Geometrical cross section; Raman cross section; Rayleigh cross section
κ Crucis, 140
Crystal lattice
H_2, 228
Crystal mixer radiometer, 86
C stars
in Magellanic Clouds, 111
C-type variable stars, 19
Curvature
spectral, 279
see also Negative curvature; Positive curvature
Curve-of-growth analysis, 2, 5, 7, 14, 218, 230, 302
solar, 3, 5
α^2 CVn, 297, 298, 300, 302, 305, 306, 307, 320
α CVn, 304
β CVn, 9
Cyanogen band, 466, 470
Cyanogen weak stars, 468
Cycloid
equation of, 408
α Cyg, 110
γ Cyg, 9
ϵ Cyg, 9
η Cyg, 9
χ Cyg, 203
35 Cyg, 9
41 Cyg, 9
61 Cyg, 57
16 Cyg A, 9
16 Cyg B, 9
Cygnus A, 80, 145, 146, 148, 149, 151, 155-56
polarization, 245, 273, 277, 278, 282
Cygnus Loop, 124

D

Damping
first overtone
in pulsation theory, 369
vibrational, 423
Damping constant, 3, 14
Damping pulsation, 365
Damping rate
in neutron stars, 426
Dark masses
superdense, 429-30
Decay rate
for oscillation, 356, 360, 370
Decay-time
of fields, 312, 313
superdense stars, 422
Decibels
as units of loss
in radio astronomy, 85
Decimeter wavelengths, 267
in radio astronomy, 79, 150, 153
Declination
in parallax measurements, 65
Degeneracy
in H_2, 211
Degenerate electrons
in supernova remnants, 419
Degree
of flattening, 11
of freedom, 221
of ionization
in protostars, 186
of polarization, 248, 261, 262
β Del, 9
δ Del, 9
Density
central
in superdense stars, 393
geometrical, 396
Density gradient
effect in parallax measurement, 62
Density scale height
in protostars, 189
Density-temperature diagram, 173, 178, 187
Density variation
in pulsation theory, 356
Depolarization, 167, 246, 253-63, 270, 277-79
see also Faraday depolarization
Destabilization, 321
in pulsation theory, 353, 359
Detectors
infrared, 193
polarization, 263
Deuterium, 220, 233, 237, 238
in protostars, 191
see also HD
Deuteron quadrupole moment, 238
Dextrogyrate component
of field, 294, 309
D galaxies, 155, 279
Diameter-temperature, 203
Dielectric aperture
in radio receivers, 83
Difference equations
coupled, 357
Differential astrometry, 61
Differential circular analyzer, 294
Differential coarse analysis, 2
Differential curve of growth, 2
see also Curve of growth
Differential Faraday rotation, 256-57
see also Faraday rotation
Differential measurements, 58
Differential refraction, 63
Differential rotation
in close binary systems, 54
Diffraction
Fraunhofer formula, 260
in parallax measurements, 61
in radio astronomy, 147
Diffuse nebulae
in Magellanic Clouds, 111
Diffuse spectra
in close binary systems, 49
Diffusion
of photons
in protostars, 173
Diffusion anisotropy, 298
Diffusion equation, 355
Dilational mode, 353
Dipolar fields, 295
Dipole antennas, 92
Dipole magnetic field, 164
Dipole moment
electric, 212, 214
Dipole transitions
collision-induced, 208
electric, 211, 212
magnetic, 212
Directivity

of radio antenna, 82
Direct rotation
in close binaries, 40
Discharge tube
as standard
in radio astronomy, 84, 89
Discordant parallaxes, 70, 71
Discrete sources
in radio astronomy, 145
polarization, 245
Dish antennas, 83
Disk component
see Polarization of radio radiation
Disk structure
in close binary systems, 45
Disk temperature
as standard
in radio astronomy, 82
Dispersion
in parallax measurements, 60
in rotation depth, 285
see also High dispersion
Displacement function, 397
Dissipation
of angular momentum
in close binaries, 36
of pulsational energy, 357, 364
Dissociation energy
H_2, 210
Dissociation equation
H_2, 207
Dissociation zone, 173, 182
Distance magnitude relation, 69
Distance modulus
for Magellanic Clouds, 105-7, 138
for spectral classification, 441
47 Tuc, 24
see also Moving cluster distance
Distance scale
and long-period variables, 22
Distortion
close binaries, 37, 50
emulsion, 62
optical, 60
D lines of sodium, 6
interstellar, 24
Dominant nucleus
in superdense stars, 394
Doppler broadening, 218
Doppler width, 217, 218, 309
30 Doradus Nebula, 98, 102, 103, 121
Double emission lines
in eclipsing binaries, 38
Double-lined binaries, 305
Double period variables, 374
Double radio sources, 146, 148, 150, 158
Doubling
see λ-type doubling
Doubly excited states
H_2, 235
DQ Cephei, 374
α Dra, 304, 334
γ Dra, 57
43 ϕ Dra A, 338
χ Dra, 9
19 Dra, 9
73 Dra, 300, 302, 304, 306, 307
D-system galaxy, 154
Dual polar feed, 265
Dumbbell galaxies, 154
Dust
formation
in close binary systems, 49
in Magellanic Clouds, 121-22
Dust lane
see Absorption lane
Dwarf Cepheids, 353, 371, 383
Dwarf galaxy
Small Magellanic Cloud as, 116
Dwarf stars
abundances, 3, 4
see also White dwarfs
Dynamical contraction, 171
in protostars, 181-83
Dynamical evolution
see Dynamical contraction
Dynamo effect, 321
Dynamo mechanism
self-excited, 314
Dysprosium
in magnetic stars, 300

E

Early-type stars
abundances, 1, 5
Earth
magnetic field, 314, 320
Eccentricities
of close binary stars, 37
of stars, 7
Eccentric orbits, 324
Eclipsing binaries, 35
Ecliptic
and close binaries, 35
Eddington approximation
time-dependent, 358
Eddington currents, 315
Eddington model, 185
Eddington opacity mechanism, 367
e elements, 11
Effective area
of radio antenna, 78
see also Collecting area
Effective conductivity, 313
Effective elasticity
of superdense stars, 424
Effective field
magnetic, 294
Effective length
of radio baseline, 148
Effective line width, 220
Effective path length, 220
Effective polytropic index, 371, 375
Effective source solid angle
in radio astronomy, 82
Effective sustaining pressure
in superdense stars, 397
Effective temperature
black-body
for long-period variables, 19
infrared, 195, 201-5
in protostars, 185
in radio astronomy, 84
in spectral classification, 438
Effective wavelengths
infrared, 194, 199
Efficiency
beam, 90-91
radiation
of antenna, 81
e-folding time, 230
E galaxies, 279, 287
Eigenfrequencies
of oscillation, 356
Eigenvalue equation
for oscillation, 356
Einstein A, 426
Einstein coefficients, 217, 228
Einstein theory
of gravity, 402
Ejection
continuous
from stars, 6
Elasticity
of medium, 424
Electric dipole transitions
H_2, 211-12
Electric field
in polarization measurements
see Transverse electric field
Electric quadrupole hyperfine structure, 237
Electric quadrupole transitions, 212
Electric vector
alignment
in Large Magellanic Cloud, 122
Electrodynamic induction, 312

Electromagnetic energy
in superdense stars, 421
Electron crush
in superdense stars, 395-407
Electron density, 258
Electronic computers
see Computers
Electronic states
H_2, 209, 214, 234-37
Electron-ion collisions
in protostars, 176
Electron-nuclear hyperfine structure, 237
Electron pressure
in stellar atmospheres, 4
Electron scattering
in pulsation theory, 369
Electron temperature
in radio astronomy, 84
Ellipse
polarization, 246
Ellipsoidal hypothesis, 28
Elliptical galaxies
radio, 154
Small Magellanic Cloud as, 116
Elliptical Gaussian structure, 148
Elliptical polarization, 251
Ellipticity
beam, 264, 266
Emden function, 182
Emden solution
for protostar, 186, 188
Emission core, 263
Emission-line effect, 445, 447
Emission lines
in close binaries, 38
in long-period variables, 23, 31
Emission-line stars, 445-46
in Magellanic Clouds, 108, 109, 117
Emission-line velocity, 29
Emission measure, 276
Emission nebulae
in Magellanic Clouds, 117, 118, 124, 125
see also Nebulae
Emission ring
in close binary systems, 36-45
Emissivity, 177, 254
Emulsion displacement, 62
Energy
geometrical, 396
Energy balance
in protostar, 172, 177
Energy conservation
in protostars, 175
Energy distribution
for long-period variables, 19-23
Energy excess
state of, 404
Energy of oscillation, 356
Energy sinks
in pulsation theory, 358
Energy sources
in pulsation theory, 358
Entropy, 174, 180
Envelope
convective, 353, 361, 369
of galaxies, 155, 161
of Magellanic Clouds, 95, 112, 141
of stellar atmospheres, 13
Envelope composition
of pulsating variables, 389
e process, 11
γ Equ, 297, 300, 304, 305, 459
Equalization
of mass
in close binary systems, 47
Equation of equilibrium
for collapsing protostars, 185
Equation of hydrostatic equilibrium, 396
Equations of condition
for parallax measurements, 67
Equations of motion
for gas in protostars, 172
Equations of state
protostar, 173
superdense star, 398, 399, 406
van der Waals, 221
Equatorial coordinates, 58
Equilibrium
radiative
in protostars, 185
Equilibrium configuration
of superdense stars, 395-407
Equilibrium line, 173, 174, 180
Equilibrium surfaces
in close binary problem, 52
Equipartition
of magnetic field, 153, 313
Equipotentials
in close binary problem, 47
Equivalent spectral class, 448
H_2, 217, 219
in atmospheres, 6
measurements, 212, 302
spectral classification, 441
δ Eri, 8, 10
36 τ^9 Eri, 328
40 Eri, 8
Errors
observational
in abundances, 7
Eu II
in stars, 307
Eu III
in stars, 307
Europium
in stars, 300, 301, 302, 307, 318, 319
spectral classification by, 445
Evaporation
coronal, 2
Evaporation temperature, 176
Evening plates, 59
Evolution
of binary systems, 36
of protostars, 171-92
early stages, 172-75
opaque stages, fast contraction, 180-83
quasi-hydrostatic contraction, 183-91
transparent stages, 175-80
of radio sources, 282, 287
galaxies, 163-64
solar, 49
stellar
and abundances, 1
and Magellanic Clouds, 95, 106, 111, 130-40
see also Thermonuclear evolution
Excess noise temperature, 84
Exchange reaction, 230
Excitation energy
H_2, 210
in protostars, 176
Excitation potential
of lines
in stellar atmospheres, 4
Excitation processes
in protostars, 176
Excitation temperature, 12
Expansion
evolutionary
in close binary systems, 51
in protostars, 176
Expansion losses, 166
Expansion speed
Crab Nebula, 411
Experimental measurements
see Laboratory measurements; Observational data

Exposure time
in parallax measurements, 62
see also Multiple exposure
Extended sources, 249
see also Radio astronomy
External galaxies
Magellanic Clouds, 104, 122
radio-frequency emission, 145
see also Radio galaxies
External probable errors
in parallax measurements, 65, 66, 67, 71, 74
Extinction
see Interstellar extinction
Extinction correction, 202
Extinction curves, 194
Extragalactic polarization, 263, 273-85
see also External galaxies
Extraordinary wave, 249
Extremal energy, 400

F

Fan-beam telescopes, 146, 151, 282
Faraday depolarization, 254, 255
Faraday rotation, 152, 167, 245, 285
ionospheric, 264, 267
Far-field distance
in radio measurements, 83
Far infrared, 193
studies of long-period variables, 19
Far ultraviolet, 199
Fast rotators, 295, 317
spectral classification, 450, 462
Fe I
in long-period variables, 31
in the Sun, 3
Feed angle, 266
Feed pattern
primary, 83
Feed system
for radio telescope, 264, 265
Fermi energy, 420, 422
Fermi gas
idealized
as model for superdense star, 394, 406
Fermi mechanism
for acceleration of electrons, 418
Fermions
identical, 211
Ferraro's law, 320
Field stars
abundance determinations, 10
dwarfs
in infrared observations, 196
Filamentary structure
of Crab Nebula, 270
of Magellanic Clouds, 124
of supernova remnants, 414
Filar micrometer, 57
Filters
see Narrow-band filters; Wide-band filters
Fine-grain emulsions, 295
Fine structure
of hydrogen molecule, 208, 237-39
of Magellanic Clouds, 118, 127
of solar magnetic field, 293
First-overtone damping
in pulsation theory, 369
First-overtone models, 382
Fission
in superdense stars, 421
Flares
in protostars, 182, 183
Flatness
of space, 400
Flattening
degree of
of Galaxy, 11
"Flat-topped" distribution, 282
Flow patterns
in close binary systems, 36-49
Fluctuations
background
in radio astronomy, 89
Fluorescence, 231
see also Resonance
Flux density
in radio astronomy, 145
definition, 77
of small sources, 77-89
Focus
stability, 60
Forbidden transitions
H_2, 209, 238, 240
Force-free fields, 315
Forcing function
in pulsation theory, 359
Formation
heat of, 228
of stars, 133
in Magellanic Clouds, 111
see also Protostars
Fornax A, 151, 155, 159-61
polarization, 282, 283
Forward reaction, 406
Fossil magnetism, 312, 313
Fourier transform techniques
in radio astronomy, 258, 286
Fourier inversion, 146, 147
Fractional polarization, 266
Fragmentation
of protostars, 180, 313
Franck-Condon factors, 226, 227, 230
Franck-Condon principle, 212
Fraunhofer diffraction formula, 260
Fraunhofer vector diagram, 259, 261
Free baryons
in superdense stars, 394
Free-bound absorption, 239, 240
Free expansion, 172
Free-fall collapse, 171, 172, 232
rate of, 178-80
Free-fall contraction, 175
Free-free transitions, 22, 209
Frequency
see Collision frequency; Critical frequency; Line frequency; Observation frequency; Rest-frequency
Frequency distribution
of galaxies, 107
of stars
of given magnitude, 69
of Magellanic Cloud, 108
Fresnel diffraction
at radio wavelength, 147
Fresnel region
in radio observations, 81
Friedmann model universe 402, 403, 408
Fringes
interference, 266
Frozen-in fields, 312
F stars
abundances, 4, 5, 7, 13, 191
in close binary systems, 48
spectral classification, 462-66
Full-amplitude pulsating variable, 361
Fundamental-mode instability, 356
in pulsation theory, 388, 390
Fundamental-mode pulsators, 384, 385
Fundamental planes
in Magellanic Clouds, 102
FU Orionis, 182
Fourier transform techniques
in radio astronomy, 258, 286
Fourier inversion, 146, 147
Fractional polarization, 266
Fragmentation
of protostars, 180, 313
Franck-Condon factors, 226, 227, 230
Franck-Condon principle, 212
Fraunhofer diffraction formula, 260
Fraunhofer vector diagram, 259, 261
Free baryons
in superdense stars, 394
Free-bound absorption, 239, 240
Free expansion, 172
Free-fall collapse, 171, 172, 232
rate of, 178-80
Free-fall contraction, 175
Free-free transitions, 22, 209
Frequency
see Collision frequency; Critical frequency; Line frequency; Observation frequency; Rest-frequency
Frequency distribution
of galaxies, 107
of stars
of given magnitude, 69
of Magellanic Cloud, 108
Fresnel diffraction
at radio wavelength, 147
Fresnel region
in radio observations, 81
Friedmann model universe 402, 403, 408
Fringes
interference, 266
Frozen-in fields, 312
F stars
abundances, 4, 5, 7, 13, 191
in close binary systems, 48
spectral classification, 462-66
Full-amplitude pulsating variable, 361
Fundamental-mode instability, 356
in pulsation theory, 388, 390
Fundamental-mode pulsators, 384, 385
Fundamental planes
in Magellanic Clouds, 102
FU Orionis, 182

G

31 Ga 78
  in superdense stars, 394
Gain
  of antenna, 79-84
Gain changes, 265, 266
Galactic absorption, 106
  in Magellanic Clouds, 121
Galactic clusters
  abundances, 10
  variable stars in, 33
Galactic depolarization, 277-78
Galactic disk
  supernovae, 412
  see also Disk population
Galactic distribution
  of long-period variables, 26
Galactic halo
  supernovae, 412
  see also Halo stars
Galactic latitude
  as coordinate
    in parallax measurements, 68
Galactic plane, 267
Galactic radio emission, 245, 267-73
Galactic rotation, 26, 27
Galactic structure
  and spectral classification, 452
  see also Disk; Halo
Galaxies
  see External galaxies; Radio galaxies; NGC classification
Galaxy
  abundances, 1
    and collapse, 11
  gravitational field, 208
  magnetic field, 245
  radio radiation, 267-73
  variable stars, 25-29
Galaxy clusters, 154, 155
Galaxy counts, 121
Gamma law
  in superdense stars, 397
Gamma mechanism, 367
Gamma-ray lines
  in superdense stars, 418
Gap of instability
  of superdense stars, 397
Gas
  in Magellanic Clouds, 111-24
  see also H I region; H II region
Gas discharge tube
  as standard
    in radio astronomy, 84, 89
Gaseous flow
  in close binary systems, 36-49
Gaseous nebulae
  in Magellanic Clouds, 98
    emission, 117
  planetary, 111, 117
Gaseous ring
  in close binary systems, 42
Gaussian beam
  in radio astronomy, 82
Gaussian distribution
  of Stokes parameters, 279
  of variable stars, 28
Gaussian structure
  of radio galaxies, 148
G band, 466, 467
  discontinuity index, 467, 468
γ Gem, 456
ι Gem, 8
κ Gem, 8
ψ Gem, 330
General Catalogue of Stellar Parallaxes, 57
General Parallax Catalog, 61
General relativity, 399
Geometrical center
  of Magellanic Clouds, 125
Geometrical cross section
  of grains, 177
Geometrical units, 396
Geometrodynamics, 428
Germanium bolometer, 193
German mounting
  for parallax measurements, 60
Giant stars
  abundances, 3, 6, 10, 15
  envelope, 355
  H_2 in, 207
  infrared observations, 196
  pulsation models, 362-63, 371, 388
Globular clusters, 7
  giant stars, 10
  in Magellanic Clouds, 97, 134-40
  spectral classification, 467
  variable stars in, 33, 371
g modes, 322
Grains
  interstellar, 175, 176, 178, 179, 207, 226
Grating interferometer
  in radio astronomy, 146
Grating techniques
  in parallax measurements, 61, 74
Gravitation
  theories of
    see Einstein; Friedmann; Schwarzschild
Gravitational binding
  of Magellanic Clouds, 129
  superdense stars, 401
Gravitational collapse
  of Galaxy, 11
  of superdense stars, 427-29
    barrier, 400
Gravitational constant
  in binary orbits, 41
Gravitational contraction
  in close binary systems, 47
Gravitational equilibrium, 178, 180, 181, 183
Gravitational field
  galactic, 208
Gravitational radiation
  from superdense stars, 424-26
    detectors for, 426
Gravitational sorting, 2
Gravitational waves
  from superdense stars, 393
Gravity criterion, 5
Gravity field
  in close binary systems, 50
Gravity modes, 322
Green Bank, 148, 274
Greenwich parallaxes, 58
Groombridge 1830, 9
Ground-based observations, 231
  infrared, 194
  of long-period variables, 19, 22
Ground radiation, 265, 266
Ground state
  H_2, 210, 211
Growth time
  nuclear, 362
α Gru, 203
G stars
  abundances, 2, 4, 5, 7, 13, 191
  close binaries, 50
  dwarfs, 6
  spectral classification, 466
Gyrofrequency, 249

H

Hα, 219, 445, 469
  Magellanic Cloud studies, 99, 109, 118
Hβ, 305
  Magellanic Cloud studies, 118

narrow-band photometry, 434
see also Hβ photometry
Hγ
index, 441
in photometry, 449
Hδ, 303
H 18, 305
Hale telescope, 95, 149, 160
Half life, 413
Cf^{254}, 411
Halo population
of Magellanic Clouds, 97-98, 134
Halo structure
radio galaxies, 148, 155
see also Envelope
Harmonic oscillation
in pulsating stars, 355
Harrison-Watkins-Wheeler
critical point, 396
Harrison-Wheeler
equation of state, 403
Harvard classification, 304
Harvard x, y system, 105
Haas-Bottlinger diagram, 7
H_2 bands
in observing long-period variables, 32
H/C ratio, 215
HC-1, 203
HC-2, 203
HD, 213-14, 230, 232-33, 237-38
H/D ratio, 220
HD stars, 4, 5, 8, 9, 11, 12, 26, 110, 120, 121, 297, 298, 301, 302, 303, 305, 307, 308, 310, 312, 318, 320, 326, 328, 330, 332, 334, 336, 338, 340
He I, 305
in close binary systems, 50-51
Heat capacity, 232
Heat flow equation, 354, 356
Heat of formation, 228
Heating
of interstellar medium, 178-80
of protostars, 173-75
Heat transport
convective, 360, 363
Heaviside value
critical, 422
Heavy elements, 318
in interstellar medium, 6, 11
in supernova remnants, 419
Heavy ions, 174
Heavy particles
in radio galaxies
see Nuclear energy
He/H
in Magellanic Clouds, 121
Helical fields, 276
Helical structure
radio galaxies, 158
Helicopters
use in radio atronomy, 81
Heliometer, 57
Helium, 318
in interstellar medium, 232
ionization in protostars, 184
liquid
in radio astronomy, 85
in Magellanic Clouds, 121
Helium abundance
in Magellanic Clouds, 120
Helium burning
and pulsation theory, 388-89
Helium core, 12
Helium enrichment, 220
Helium ionization zone, 363-64, 375, 377
Helium lines, 11-12
Helium stars, 1, 11-12, 15
Helmholtz instability, 412
Helmholtz-Kelvin contraction, 171, 448
Hα-emission stars, 446
Henize's emission nebula, 124
Henry Draper catalog, 326
Henyey's contraction, 190
α Her, 202
ξ Her, 9
η Her, 9
45 Λ Her, 336
ν Her, 9
ρ Her A, 336
φ Her, 304
χ Her, 9, 14
ω Her, 304
72 Her, 9
52 Her A, 336
99 Her A, 9
Hercules A, 151, 153, 155, 161
polarization in, 284
Hertzsprung-Russell diagram, 171, 182-83, 186, 188, 376
and spectral classification, 446
for Magellanic Clouds, 108
Hertzsprung-Russell gap, 458, 468
Heteronuclear molecules, 214
Hetzler 1-1, 203
Hetzler 4-1, 203
Hetzler 4-2, 203
HGC 6530, 190
H_2/H ratio, 226
High dispersion, 295
and spectral classification, 467
for abundance determination, 10
in long-period variables, 22
High-energy particles
in protostars, 184
in radio sources, 245
High-frequency cutoff, 253
High g modes, 322
High-precision photometry, 450
High-resolution spectra, 222
in long-period variables, 22
High-velocity stars
abundances, 4, 7, 12
and spectral classification, 464
H line
of Ca II, 6, 14, 300
and spectral classification, 467
in long-period variables, 31
H/O
solar, 220
H_2O
in protostars, 177
H_2O bands
in observing long-period variables, 32
Hodge 11, 139-40
Horizontal branch stars, 387
Horn antenna, 87
pyramidal, 79-80
Horn-selecting antenna, 81, 92
Hot stars
in close binary systems, 49
infrared, 194
Hour angle
in parallax measurements, 60
Hβ photometry, 441
HR stars, 297, 299, 300, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 319, 320, 325, 332, 334, 336, 340, 441
H I regions
hydrogen molecule in, 227
in Magellanic Clouds, 112-17
Large Magellanic Cloud, 112-16
Small Magellanic Cloud, 116-17

polarization, 275
protostars, 182
H II regions
hydrogen molecule in, 227
in Magellanic Clouds, 105, 111, 117, 123
polarization, 246
Hubble parameter, 155
Hunds case b coupling, 210, 212, 237
3 Hya, 332
Hyades
infrared observation, 196
lithium in, 13
metal content, 10
and spectral classification, 448, 464, 467
Hyades No. 63, 8
Hyades No. 64, 8
Hyades No. 73, 8
Hybrid circuits
in radio astronomy, 87
Hydrodynamic flow
in close binary systems, 38
Hydrogen
in long-period variables, 21-22
in Magellanic Clouds, 121
metals-to-hydrogen ratio, 6-11
in protostars, 188
in stars, 12
Hydrogen burning, 171, 189, 439, 440
Hydrogen emission
in close binary systems, 36
Hydrogen envelope
of Magellanic Clouds, 96, 112
Hydrogen ionization zone, 171, 173
pulsation theory, 182, 360
Hydrogen line-21 cm
studies of Magellanic Clouds, 112-17
large, 112-16
small, 117
see also Centimeter wavelengths
Hydrogen lines, 6
Hydrogen molecule, 171, 175-76, 207-44
experimental term values
electronic structure, 234-37
rotation-vibration structure, 233-34
in planetary atmospheres, 215-22
in stellar atmospheres, 222-33
structure, 209-11
theoretical calculations, 237-41
continuum measurements, 239-40
fine, hyperfine structures, 239-40
scattering, 241
transitions, 211-13
isotope effects, 213-15
Hydrogen shell, 12
Hydromagnetic instability, 315
Hydromagnetic oscillation, 320
Hydrostatic equilibrium
in superdense star, 395-99
equation, 396
β Hyi, 8
Hyperfine structure, 14
H_2, 208, 237-39
Hyperon model, 406
Hyperons
in superdense stars, 399

I

IAU Symposium No. 20, 103
IC 443, 272
IC 4296, 151-52, 284
Ice grains
in protostars, 177
Illumination pattern
in radio astronomy, 91
Image density
in parallax measurements, 61
Impedance matching
in radio astronomy, 78
Implosion energy
of superdense stars, 407
Inclination
of magnetic field
in stars, 298
of orbital plane
in close binary systems, 44
in Magellanic Clouds, 101, 126, 128
of polarization ellipse, 246
Incompressible fluid, 315
Δ Index, 466
Index of refraction
see Refractive index
Index of rigidity, 397
Induction
electrodynamic, 312
Infinite density
of superdense stars, 398
Infrared
astronomical measurements in, 193-206
bolometric corrections, 199-201
effective temperature, 201-5
intrinsic colors, 195-99
Infrared detectors, 193
Infrared radiation
in protostars, 177
Infrared spectra, 22
Magellanic Cloud studies, 97
peak energy, 19
see also Far Infrared; Near Infrared
Infrared stars, 203
Initial abundances
of elements in stars, 12
Initial composition
of stars, 451
Initial state
of contraction, 183-84
of protostar, 180
Initial temperature
for protostar, 175
Insertion losses
in radio astronomy, 85
Instrumental effects
in parallax measurements, 68
in radio astronomy, 254, 264, 266
Integrated brightness
Magellanic Clouds, 95, 105
radio, 115, 116
Integrated polarization
Crab Nebula, 272
Integrated radiation
centimeter and decimeter wavelength, 150
Integrated spectrum, 451
Intensification
magnetic, 302-3, 317
Intensity
residual, 5
Interatomic potential
in H_2, 240
Intercombination lines, 3
Intercorrelation
in parallax measurements, 65
Interference-filter techniques
studies of Magellanic Clouds, 103, 434-35
Interferometer
in radio astronomy, 87, 265
see also Grating interferometer; Variable-spacing interferometer
Intergalactic magnetic fields, 164
Intergalactic medium, 156, 167
magnetic field, 288
Interior boundary conditions
pulsation theory, 356
Interiors
stellar
synthesis in, 6
see also Protostar

Intermediate-amplitude studies
pulsation theory, 368, 370
Intermediate-band index, 433
Intermediate coupling, 295
Intermediate heavy elements, 13
Intermediate infrared, 193
Internal constitution of stars, 451, 452
Internal distortion
in close binary systems, 50
Internal errors
in parallax measurements, 66-67, 74
Internal mean error
spectral classification, 460
Internal noise
in radio astronomy work, 79
International Astronomical Union
see IAU and transactions
Internuclear distance
H_2, 235-36
Interplanetary plasma
effect on radio astronomy, 89
Interstellar absorption, 173
Interstellar D lines, 24
Interstellar extinction, 193
in long-period variables, 22-23, 30
Interstellar extinction law, 194
spectral classification, 444
Interstellar K line
in Magellanic Clouds, 117
Interstellar medium, 175
H_2, 224-33
heavy elements in, 6
in Magellanic Clouds, 99, 122-23
Interstellar obscuration, 26
Interstellar polarization
in Magellanic Clouds, 123
see also Interstellar medium; Magnetic fields
Interstellar radiation, 175
in protostars
polarization, 299
Interstellar reddening
infrared, 195, 198
in long-period variables, 22-23
photometry, 435, 444
see also Interstellar medium
Intrinsic colors
of stars, 194, 195-99
Intrinsic line width, 218
Intrinsic polarization, 257-58
Ionization energy
H_2, 210
Ionization front
pulsation theory, 368
Ionization limit
H_2, 236
Ionization potential
in protostar, 186
Ionization state
of metals
in stellar atmospheres, 6
Ionization zone, 171, 173
nonadiabatic, 354
in nonpulsating variable stars, 351
Ionized hydrogen
in Magellanic Clouds, 112
see also H II regions
Ionized lines, 6, 12
Ion migration, 2
Ionosphere
effect on radio astronomy, 89
Faraday effect, 267
H_2, 208
polarization, 263-64
Iron, 6
Magellanic Cloud stars, 110
in protostars, 17, 176
in stars, 12, 13, 300, 305, 306, 319
Iron-to-hydrogen ratio, 15
in stellar abundances, 7, 14
Iron seed nuclei, 11
Irregular galaxies
radio, 154
Irregularity cell
polarization, 257
Irregular variables, 23
in Magellanic Clouds, 110
Irrotational force, 314
Isolation techniques
in radio astronomy, 87
Isolators
in radio astronomy, 86
Isorotation, 315
Isosteric surfaces, 315
Isothermal atmosphere, 221
Isothermal surfaces, 315
Isotope effects
H_2, 213-14
Isotopic molecule, 230

J

Jacobian integrals
in close binary problem, 43
Jaschek's O group, 304
Jet
in M87, 161
Monroe nuclear, 284, 412
J-J coupling, 295
Jodrell Bank, 147-48, 274
Jovian spectra, 220
see also Jupiter
Jupiter
decimeter observations, 287
H_2, 215-17, 219-22

K

Kelvin contraction, 171
Kepler's Nova, 272
Kilohertz bandwidths, 89
Kinematical properties
of stars, 7, 14
long-period variables, 22, 26-29
Kinetic temperature
in protostars, 172
Kitt Peak National Observatory, 433
K line
of Ca II, 6, 14
in long-period variables, 31
in Magellanic Clouds, 117
magnetic stars, 299, 300
spectral classification, 467
K line discontinuity, 303
K line index, 441
Koenigsberg heliometer, 57
Kramers opacity, 362
Kron 3, 139
K stars
abundances, 4-5, 7, 13

L

L 104, 134
Laboratory measurements
H_2, 219, 223, 233-37
10 Lacertae, 4
Lagrangian coordinates, 354
Lagrangian form
of equations of motion, 172
Landau-Oppenheimer-Volkoff
critical point, 396
Lanthanum
in stars, 300
Large-amplitude pulsation, 368, 384-85
Large Magellanic Cloud, 95, 104, 107, 110
see also Chemical composition;

Clusters; Rotation
Late-type star, 19
variable, 33
Latitude
galactic
in parallax measurements, 68
Lattice structure
see Crystal
Lead
in stars, 300
Lead-sulfide photoconductive cells, 193
Least squares method, 59, 74
Lens size
in parallax measurements, 60
o Leo, 8
γ Leo A, 8
45 Leo A, 332
γ Leo B, 8
δ Lep, 8
5 μ Lep, 330
γ Lep A, 8
Level population, 5-6
Levinger-Simmons
equations of state, 406
Levogyrate spectrum, 309
33 Lib (ζ^2), 336
7 μ Lib A, 334
7 μ Lib B, 334
Light
bending of, 402
velocity of, 401
Light curve
for close binary systems, 37, 48
from pulsation theory, 360
Light elements
in stars, 12
Limb darkening, 222, 295
observational uncertainties, 54
Lindsay 1, 139
Lindsay's clusters, 134
Linear adiabatic pulsation
pulsation theory, 355-57
Linear nonadiabatic theory
pulsation, 357-58
Linear polarization, 245, 246
of antenna, 78
in Magellanic Clouds, 122
in radio galaxies, 150
Line blanketing, 4
Line formation
in stellar atmospheres, 5, 6
Line frequency
emission, 77
Line impedance
in radio astronomy, 84
Line profiles
abnormal
in magnetic stars, 303
in abundances, 6
in close binary systems, 54
Line receivers
in radio astronomy, 89
Lines of force, 313
Line temperature
in radio astronomy, 85
Line velocity
see Absorption, emission
Line weakening, 30-32
in long-period variables, 32
Line width
in close binary systems, 50
see also Doppler line width; Equivalent line width; Intrinsic line width
Liquid helium
infrared, 193
in radio astronomy, 85
Liquid nitrogen
coolant, 193
Lithium
abundance, 1, 13-14
in protostars, 191
in stars, 14
20 LMi, 8
Lobes
of antenna, 82
Local spiral arm
polarization, 268
Local standard of rest, 26, 128
Local thermodynamic equilibrium, 207
and abundance determination, 2, 5, 6
Long-focus refractors
in parallax measurements, 60
Longitudinal fields, 260
Long-period variable stars, 19-34
absolute magnitude, 23-25
cluster variables, 32-33
energy distribution, color, 19-23
galactic distribution and kinetics, 25-29
interstellar reddening, 22-23
Magellanic Cloud variables, 99, 105
masses, 31-32
spectroscopic observation, 29-32, 470
chemical composition, 31-33
Long-wavelength observations, 195-205
Loops
in magnetic field, 287
Losses
in radio work, 79
see also Expansion losses; Synchrotron losses
Low-noise antennas, 92
L-S coupling, 295
LTE, 5-6
see also Local thermodynamic equilibrium
Luminosity
radio, 145
surface
in pulsation theory, 365
Luminosity class
I and infrared, 198
II, 436
III, 436
and infrared, 195, 198
IV, 436
V, 305, 436
and abundances, 15
variable stars, 23, 29
Luminosity function
in parallax measurement, 59
in solar neighborhood, 69
Lunar occultation
radio, 147
Ly α, 241
Lyman bands, 212, 227, 230
Lyman edge, 367
α Lyr, 201-2
β Lyr, 45-47
ζ^1 Lyr, 299
6 ζ^2 Lyr, 338

M

Magellanic Clouds, 95-144
bright stars, 107-11
clusters and evolution, 130-40
globular clusters, 131-40
young clusters, 131-40
distances, 105-7
gaseous component, cosmic dust, 111-12
chemical abundances, 119-21
H I regions, 112-17
H II regions, 117-19
nonthermal component
supernova remnants, 122-24
optical polarization, 121-22
rotation and mass, 124-29
Magnesium
in stars, 12, 300, 307
Magnetic configurations, 315
Magnetic coupling, 313
Magnetic curve
mean, 298
Magnetic dipole hyperfine

structure, 237
Magnetic dipole transitions, 212
Magnetic fields
dipole, 164
galactic, 245
intergalactic, 156
in Magellanic Clouds, 112, 122, 142
in radio galaxies, 146, 150, 153, 165
stellar
in atmospheres, 317-18
models, 315-17
origin, 312-15
Magnetic intensification, 302-3, 317
Magnetic mirror
mechanism for acceleration, 418
Magnetic moment, 314
Magnetic pressure, 271
Magnetic resonance
techniques, 238
Magnetic ropes, 316
Magnetic sorting, 2
Magnetic stars, 293-352
observations, 294-99
properties, 299-306
periodic variables, 306-12, 318-25
theories, 312-25
Magnetobremsstrahlung
see Synchrotron
Magnetohydrodynamics, 293
Magnetosphere
in Crab Nebula, 422
Magnitude effect, 61, 63, 74
Magnitudes
absolute of long-period variables, 23-25
visual
of long-period variables, 21, 22
see also Integrated magnitudes; Mean magnitudes
Main-body studies
of Magellanic Clouds, 121
see also Bar; Wing
Main lobe
of antenna, 82
Main sequence
contraction to, 171, 183, 189-91
infrared, 197
β Lyr system, 47
in Magellanic Clouds, 132
and pulsation theory, 382
47 Tuc, 32
see also Zero-age main sequence
Manganese, 11
in stars, 12
spectral classification, 299, 300-1, 307, 445
Many-component structure
radio sources, 148
Marginal surface
in close binary problem, 53
Mass
geometrical, 396
Mass absorption coefficient, 174, 177
Mass ejection
in close binary systems, 37, 40
Mass equalization, 47
Masses
of long-period variables, 32-33
of Magellanic Clouds, 118, 124-30
large, 124-29
small, 130
Mass loss
of close binary systems, 40
of long-period variables, 32
Mass luminosity relation, 46, 377
Mass quadrupole
in superdense stars, 423
Mass ratio parameter
in binary systems, 38, 43
Mass transfer
of binary systems, 36
Matched impedance, 84
in absolute intensity calibration, 78
Maximum brightness
in long-period variables, 23
Maximum compression phase, 362, 370
Maximum parallax effect, 60
McCormick lens
in parallax measurements, 61
McCormick parallax series, 58, 67
Mean colors, 196
Mean electronic pressure
in photospheres, 4
Mean error
observational, 447
parallax measurements, 72
radio astronomy, 88
spectral classification, 452
Mean free path
of photon
in protostar, 180
Mean intrinsic color, 198
Mean magnetic curve, 298
Mean magnitudes
for long-period variables, 24
Mean molecular weight, 172
Mean opacity, 177
Mean parallax, 59, 68
Mean period
in pulsation theory, 386
Mean pressure
in stellar atmospheres, 5
Mean pulsational energy, 357
Mean radial velocities, 127
Mean temperature
in photospheres, 4
Median parallax, 72
Megahertz bandwidths, 89
Membership indicators
for stars in Magellanic Clouds, 108
Mercury
in stars, 445
Meridian circle, 57
Meridional currents
in magnetic stellar atmospheres, 314, 319
μ Mesons
in superdense stars, 399
Messier 8, 121
Messier 20, 121
Messier 31
distance to, 95
Metal index m, 468
Metallic continua, 222
Metallicity of stars, 7, 14
Metallic-line absorption
in long-period variables, 21
Metallic-line ratios
in long-period variables, 29
Metallic-line stars, 1, 57, 297, 305
and spectral classification, 437, 457, 461
Metal-line blanketing, 461
Metal-line index, 436, 456, 460, 463-65
Metals
ionization state
interstellar atmospheres, 6, 222
in Magellanic Clouds, 121
in protostars, 189
in pulsating stars, 382, 386-87
Metals-to-hydrogen ratio, 1, 6-11, 14
in Magellanic Clouds, 121
and spectral classification, 436
see also Iron
Metastable states
H_2, 212, 238
Meteorites
chondrite

abundances, 13
Meter wavelength, 153
Mg II
in close binary systems, 50
ρ^1 Mic, 340
Micrometer
filar, 57
Microphotometry
on close binary systems, 51, 54
on magnetic stars, 303
Microturbulence, 6, 302
Migration
of ions, 2
Millimeter wavelengths
in radio astronomy, 89
Mills Cross
and Magellanic Clouds, 95, 107, 123
Milne Eddington model, 5
m_1 Index, 445, 446, 456
Mineral grains
see Grains
Minimum energy, 279
Mira-type variable stars, 19, 20, 22, 353
Mirror points, 253
Mixer radiometer, 86
Mixing-length theory
for protostars, 189
pulsation, 354, 364-65
MK classification, 46, 435, 439, 452
MK supergiants
in Magellanic Clouds, 108
Mn II
in stars, 306
Mn stars, 301
Model stellar atmosphere, 4-5
for long-period variables, 29
and spectral classification, 440, 443, 451, 464
Modes
gravity, 322
pressure, 322
Modulation
bandwidth, 263
Molecular axis
orientation, 234
Molecular bands
in observing long-period variables, 22, 24
Molecular beam techniques, 238
Molecular hydrogen
in protostars, 171, 175, 176
see also Hydrogen molecules
Molecular ions, 214-15
Molecular quantum number, 234
Molecular weight
mean, 172
Molecules in protostars, 177
Molybdenum
in stars, 13, 394
Monochromatic opacity
in model stellar atmosphere, 4
Monoenergetic electrons
synchrotron radiation, 252, 256
Monroe jet, 412
Moon
radio occultation by, 147, 414
Morning plates, 59
Mount Wilson classification, 304
Moving-cluster distance, 201
MSH 13-33, 151-52
MSH Sydney catalog, 278
M stars, 8, 9, 13, 138-39, 140, 161, 164, 284, 374, 382, 383-84, 387, 390
giants, 19, 21-22, 30
in Magellanic Clouds, 111
m star, 305
M-type variable stars, 19-20
Multichannel spectrograph-photometer, 435
Multicolor photometry, 194
in long-period variables, 22
Multiple exposure
in parallax measurements, 74
Multiple radio sources, 148, 151, 164
Mural circle, 57
M4 V, 203
M6 V, 203
MWC, 142, 305

N

N 44, 118, 132
N 49, 124
N 63a, 124
Na D lines, 6, 467
Nancay, 147-48
Narrow-band index, 433-70
Narrow-band photometry, 29, 199
photoelectric, 233-70
Naval Observatory
parallax measurements, 72
n, γ capture processes, 412
N 132d, 124
Ne III, 305
Near infrared, 193, 204
observation of long-period variables, 29
Nebulae
in Magellanic Clouds, 98
emission, 117
planetary, 117
Nebular spectrographs
of Magellanic Clouds, 117
Negative curvature
of spectrum, 256
Neodymium
in stars, 300
Neon
in stars, 12
Neptune, 215
Neutral points, 314
Neutrino deposition, 410
Neutrino pressure, 408
Neutrinos
in superdense stars, 393
see also Prompt neutrinos
Neutron capture
cross section, 13
see also nγ Capture
Neutron core, 409
Neutron gas
in supernova remnants, 419
Neutron production, 11, 13
Neutron stars, 395, 403, 407, 426
New General Catalog
Magellanic Clouds, 104
Newtonian approximation, 397, 399, 425
superdense stars, 395
Newtonian focus
100-inch reflector
in parallax measurements, 67
Newtonian two-body problem
and close binary stars, 36
N galaxies, 154
NGC clusters, 8, 9, 33, 34-37, 68-74, 105, 106, 118, 121, 124, 131, 132-33, 134, 135, 137, 138, 139, 140, 146, 154, 155, 158-59, 160, 161, 188, 190, 279, 282
Nickel
in stars, 12, 300
Night corrections, 434
Night errors, 62
Nitrogen
in radio work, 92
in stars, 12, 467
NML Cyg, 203
NML Tau, 203
nn+γ process
in superdense stars, 421
Nodes
displacement function
superdense stars, 397
Noise diode, 84
Noise power
absolute standards, 84-87

Noise source, 86
in intensity calibrations, 78
Nonadiabatic effects, 356
Nonadiabatic ionization zone, 354
Nonadiabatic pulsation theory
linear, 357-58
Non grey problem
stellar atmospheres, 4
Noninteracting Fermi gas, 406
Nonlinearity
in antennas, 92
Nonlinear pulsation theory 358-60, 375
Nonlocal density scale height
for protostars, 189
Non-LTE, 6
see LTE
Nonmagnetic variables
distinguishing, 299
Nonrelativistic gas, 397
Nonthermal component
galactic, 245, 249
in Magellanic Clouds, 112, 118, 122-24
in radio galaxies, 146, 150
Normal equations
in parallax measurements, 63
Normalized power-pattern
radio, 82
Normalized response function
in radio astronomy, 77-78
North Galactic Spur, 264
Novae
in Magellanic Clouds, 105
$n\alpha$ process
in superdense stars, 419
Nuclear energy
in radio sources, 153
Nuclear excitation, 362
Nuclear fission
in superdense stars, 421
Nuclear fluid, 412
Nuclear growth time, 362
Nuclear magneton, 237
Nuclear matter, 393
Nuclear spin
magnetic interaction, 208, 237
Nuclear-symmetry rule, 212, 237
Nucleosynthesis, 1
Nucleus
density, 395
dominant
of superdense stars, 394
double
in radio galaxies, 155
of galaxy
Small Magellanic Cloud, 116
Null method, 266
Numerical integration
of absolute energies
in infrared, 199
Numerical solution
of close binary problems, 39
Nutation, 57

O

O II
Virgo A, 161
O III, 305
Objective grating
in parallax measurements, 61
Objective prism radial velocity
for Magellanic Clouds, 108, 132
plates and spectral classification, 445
Oblate configurations
magnetic, 315
Oblatic spheroid model
Large Magellanic Cloud, 128
superdense stars, 424
Oblique fields, 302
Oblique rotator model, 319-20
Observational data
for eclipsing binary stars, 35
for magnetic A stars, 293-99
see also Survey
Observational errors
in abundances, 7
in parallax measurements, 58-62
Observational mean error, 447, 452
Observational techniques
narrow-band photometry, 433-35
Observation frequency, 249
O/C ratio
in long-period variables, 32
solar, 220
Occultation techniques
of Crab Nebula, 270
radio, 147
Odd-even effect, 2
"Off source" feed rotation, 265
Of stars, 132
O/H ratios
in long-period variables, 32
Ohmic losses
in radio astronomy, 92
Old clusters
in Magellanic Clouds, 121
Old stars
in Magellanic Clouds, 97
and variable stars, 33
One-layer approximation, 4
Oort's constants, 26-27
Oosterhoff classification, 386
Opacity
of binary components, 45
in long-period variables, 19, 22
mean, 177
monochromatic
in model atmospheres, 4
sources in protostars, 171, 175
Opacity law, 362-63
Opacity mechanism, 367
Opacity tables, 221
Opaque disk model
for close binary systems, 45-49
Opaque protostars, 175, 179-83
Open clusters
in Magellanic Clouds, 97, 110
ν Oph, 305, 325
ω Oph, 304
Oppenheimer
see Landau-Oppenheimer
Optical depth
and abundances, 4
central, 219
Optical distortion
in parallax measurements, 60
Optical redshifts, 153
Optical thickness
in protostars, 179
see also Optical depth
Optics
for parallax measurements, 60
Orbiting Astronomical Observatory, 230
Orbits
planetary
and relativity, 402
Ordering
of magnetic fields, 256
Ordinary wave, 249
α Ori, 202, 222
16 h Ori, 330
π^2 Ori, 8
ϕ^2 Ori, 8
I Ori association, 447-49
Orientation correction
of magnetic field
in galaxies, 146
molecular axis
H_2, 234
in parallax measurements, 63
Orion
radio emission, 80

stars, 231
Orion Nebula, 121, 190
Orthohydrogen, 211, 227-28
Oscillation
adiabatic
of close binary stars, 50
image
in parallax measurements, 62
Oscillator strengths
H_2, 239, 267
O stars
atmosphere, 4
in Magellanic Clouds, 98
supergiants, 117
in spectral classification, 438-53
Overabundant elements
in magnetic stars, 299, 300
Overlying absorption
in Magellanic Clouds, 121
Overstability, 323
Overtone instability, 365
Owens Valley, 147-48
Oxygen
absorption
radio, 88
in Magellanic Clouds, 121
in magnetic stars, 300, 310
in stars, 12
Oxygen abundance
in Magellanic Clouds, 120

P

Packing parameter
in superdense stars, 400
Palomar parallaxes, 72
Parabolic antennas, 82-83, 146
and Magellanic Clouds, 95
Parahydrogen, 211, 227-28
Parallax
personal interference in measurements, 65
see Statistical parallax; Trigonometric parallax
Parallax effect, 58
Parallax factor, 58, 65
Paramagnetic ions, 318
Paramagnetic particle, 228
Parkes 210-foot radio telescope, 112, 116, 268
and Magellanic Clouds, 119
Paschen lines, 304
Path length
see Effective path length
P Cygni features
in Magellanic Cloud stars, 109
Peak transmission wavelength, 434
Peculiar A stars, 299
abundances, 1
and spectral classification, 437, 444-45, 461
Peculiar B stars, 445
β Peg, 202
γ Peg, 4
δ Peg
see α And
ι Peg, 9
ζ Peg, 9
85 Peg, 9
Pencil-beam instruments
in radio astronomy, 87, 146, 148, 156
α Per, 8
β Per, 201-2
see also Algol
ζ Per, 4
θ Per, 8
ι Per, 8
ν Per, 8
21 Per, 310
α Per cluster, 449
Periastron correlations
in close binary systems, 37
Perigalactic distances
of stars, 7
Period, 370-76
of variable stars
see Cepheid variables; Pulsation theory; Variable stars
Periodic orbits
for close binary systems, 39
Periodic variables
magnetic, 318-25
see also Variable stars
Period-line width relation, 312
Period-luminosity relation
in Magellanic Clouds, 99, 105, 141
Period ratio
in pulsating variables, 371-73
Periods
of rotation and revolution
Magellanic Clouds, 129-30
χ Persei, 140
η Persei, 140
Perturbation
gravitational
in close binary systems, 50
temperature
in model stellar atmospheres, 4
Perturbation methods
in stellar structures, 316
Phase center
of feed system
radio telescope, 264
Phase criterion
in pulsation theory, 363, 378
Phase delays
pulsation theory, 357-58
Phase difference
of polarized components, 248
Phase integral
pulsation theory, 377-78
Phase lag
pulsation theory, 390
Phase relations, 389
Phase space, 406
Phasing relation
pulsation theory, 367
ι Phe, 340
Photoconductive cells, 193
Photodissociation
H_2, 208-9, 225, 240
Photoelectric observation
of long-period variables, 19
of Magellanic Clouds, 111
Photoelectric photometry
narrow-band, 133, 470
Photographic coordinate determination
in parallax measurements, 63
Photographic parallaxes, 57
Photoionization continuum, 239
H_2, 208
Photometric criteria, 10
Photometric distance, 461
Photometric errors, 456
Photometry
in abundance determination, 4, 14
for eclipsing binary systems, 35
UBV
of long-period variables, 19-21
Photon diffusion
in protostars, 173
Photosphere
of protostars, 185
of pulsating stars, 356, 358
of stars, 45
of Sun, 5, 13
Photosphere abundances, 6, 12
Pictor A, 151, 284
Pion interactions
in superdense stars, 4, 19
Pitch angle
of helix, 250, 253
Pitch-angle cone, 251
Planck distribution, 367
Planck index, 4, 5

Planck maximum, 223
Planck mean, 177, 241
Plane parallel model
for pulsating stars, 366
Planetary atmospheres
H_2 in, 207-9, 220
Planetary nebulae
in Magellanic Clouds, 110, 117, 125, 127
Planetary observations
infrared, 194
Planetary orbits
and relativity, 402
Planetary system
and eclipsing binary systems, 35
Planets
see Jupiter
Planimetric integration, 199
Plasma
effects
in radio astronomy, 89
ionized, 245
magnetic, 154
Plasma flow
radio astronomical observations, 289
Plasma instability, 166
Plasmon pairs, 163, 165
Plate constants
in parallax measurements, 64, 74
Pleiades, 140, 467
P-mode oscillation, 323
Polarization
in Magellanic Clouds
optical, 121-22, 212
radio, 212
of radio wavelength radiation
absolute intensity calibrations, 77-78
in radio galaxies, 150-51
Polarization amplitude, 263
Polarization angle, 254-55, 262
see also Pitch angle
Polarization ellipse, 246
transverse, 247
Polarization-frequency relation, 254
Polarization index, 277
Polarization of radio waves, 245-92
detection techniques, 263
direct, 264-66
indirect, 263-64
observational results--extragalactic, 273-85
depolarization, 277-79
extended sources, 279-84
intrinsic polarization angle and elongation, 284-85
rotation measurement and field models, 274-77
small sources, 273-74
observation results--galactic, 267-73
background, 267-69
discrete sources, 269-73
source models, 285-90
depolarization, 285-87
evolution, 287-90
synchrotron radiation, 246-63
depolarization, 253-63
magneto-ionic medium, 249-50
synchrotron theory, 250-53
Polyatomic systems, 214-15
Polytropic index, 179, 371
Polytropic relation, 173
Population
of atomic level, 56
in stars, 14
Population criteria
on variable stars, 29
Population I, 12
in Magellanic Clouds, 98, 113, 125, 129
variables, 25, 299
Population II
a-r diagram, 455
characteristics, 7, 8
in Magellanic Clouds, 99, 113, 121
variables, 26
Population II Cepheids, 353, 391
Position angle
in radio astronomy, 79
Position function, 400
Positive curature
of spectrum, 256
Potential energy curves
H_2, 209-10
Power
see Available power
Power law spectrum, 251
for X rays in superdense stars, 415
Power pattern
normalized
in radio astronomy, 82
Praesepe
stars in, 8, 467
Praseodymium in stars, 13, 300
Pre-main-sequence contraction, 189
Pressure
electron
in stars, 4
geometrical, 398
mean
in stars, 5
Pressure boundary conditions for pulsation theory, 356
Pressure-density relation
in superdense stars, 405
Pressure dissociation, 221
Pressure-induced transitions, 215, 219-20, 240
Pressure modes, 322
Pressure scale height
of protostars, 189
Primary feed pattern
in radio astronomy, 83
Primeval magnetic field, 316, 451
Principle of causality, 402
Probable errors, 65
in parallax measurements, 59, 74
in radio calibration, 81
in spectral classification, 443
see also External errors; Internal errors
Probes
of feed system
in radio astronomy, 265
Procyon, 462
Projection effects
in Magellanic Clouds, 126
Prolate configurations
magnetic, 315
Prominences
solar, 45
Prompt gravitational radiation, 424-26
Prompt neutrino emission, 426-27
Proper motion, 58
in Magellanic Clouds, 105, 109, 132
Proper time, 408
of singularity
of superdense stars, 394
Protostars, 171-92
early stages, 172-75
dynamical properties, 172-73
time-scales, cooling and heating, 173-75
in Magellanic Clouds, 133, 313
opaque stages, fast contraction, 180
dynamical contraction, core bounce, 181-83
initial states of opaque stars, 180-81
quasi-hydrostatic contraction, 183
evolution toward main sequence, 189-91
initial conditions, 183-84
surface conditions and external structure, 184-89

transparent stages, 175
case opaque to starlight, 179-86
case transparent to starlight, 178-79
comparison rates-cooling, heating, free fall, 178
cooling and heating processes, 175-78
α Psc, 304
113 α^2 Psc, 328
γ Psc, 9
ι Psc, 9
κ Psc, 310
8 κ Psc, 340
ν Psc, 8
87 Psc, 326
Pulsational energy
mean, 357
Pulsational instability, 381
Pulsation amplitude, 358-59
Pulsation constant, 370
Pulsation period, 358
Pulsation theory, 353-92
causes of instability, 362-70
instability region, 377-83
methods, 354-60
convolution, 360-62
linear adiabatic theory, 355-57
linear nonadiabatic theory, 357-58
nonlinear theory, 358-60
overtones, 383-88
periods, 370-76
results, 388-91
ρ Puppis, 391
Puppis A, 272
Pyramidal antenna, 79-80

Q

Quadrature calculations
in spectral classification, 451
Quadrupolar fields
magnetic, 295, 298
Quadrupole absorption, 220
Quadrupole mode, 353
vibrational in superdense stars, 423
Quadrupole moment, 228
Quadrupole oscillation, 411
Quadrupole radiation, 206, 211-13, 215, 217-18
Quadrupole vibration, 424-26
Quantum geometrodynamics, 428
Quasars, 146, 148
polarization of, 279
Quasi-adiabatic stability analysis, 353
Quasi-free pions
in supernova remnants, 419
Quasi-hydrostatic contraction, 183-91
Quasi-hydrostatic equilibrium, 171, 181
Quasi-longitudinal approximation, 249
Quasi-molecular hydrogen, 209, 222, 239
Quasi-monochromatic radiation, 246
Quasi-stellar radio sources, 146, 148, 167

R

Radcliffe plates
of Magellanic Clouds, 106, 119
Radical compression
galactic magnetic field, 272
Radial oscillation
of superdense stars, 421-24
Radial pulsation, 317
Radial velocities
in Magellanic Clouds, 100, 105, 108, 127
for Mira stars, 26
Radial-velocity curve
for close binaries, 49
Radial vibration
in superdense stars, 396
Radiation counterpressure
in superdense stars, 422
Radiation efficiency
of antenna, 81
Radiation pressure
in protostars, 180
Radiative equilibrium
and spectral classification, 451
Radiative excitation, 227
Radiative heat flow, 354-55, 366
Radiative loss
interstellar gas, 229
Radiative photospheres
in pulsation theory, 380
Radiative transfer
in pulsation theory, 358
Radiative transitions
in protostars, 176
"Radiative zero" boundary conditions, 363
Radio astronomy
absolute intensity calibrations, 77-94
observation of galaxies, 145-70
Radio emission
continuum, 145
Radio galaxies
evolution, 163-64
observations, 147-54
3C 33, 161
3C 295, 161
3C 338, 162-63
Centaurus A, 156-58
Cygnus A, 155-56
Fornax A, 158-61
Hercules 4, 161
intrinsic properties, 152-54
polarization, 150-51, 253
properties of visible galaxies, 154
surveys, 148-50
Virgo A, 161-62
wavelength dependence, 151-52
structure, 149-70
techniques of observation, 146-47
see also 3C classification; NGC classification
Radio luminosity, 145, 153
Radiometer, 78, 86
Radiometric observation
on long-period variables, 19
Radio sources, 148
see Extended radio sources; Small radio sources
Radio stars, 145
Radius of superdense stars, 394
Raman cross section, 209
Raman effect, 233
Raman scattering, 241
Random polarization, 257
in radio work, 78
Random velocities
in Magellanic Clouds, 128
R Aql, 222
Rare earths
in stars, 302, 318
Rate constant
characteristics, 421
Rate of transfer of angular momentum
for close binary systems, 40
Rates
cooling, 175
free-fall, 175
heating, 175
see also Time-scales
Rayleigh cross section, 209, 240
Rayleigh scattering, 219-20, 222, 240-41
R Boo, 20
R Dra, 20
Reaction rate
in pulsation theory, 362
Reactions
forward, 406
see also Two-nucleon reactions

Receiver
radio
in absolute intensity calibrations, 78
Reciprocal effective temperature, 454
Recombination
interstellar, 232
Recombination coefficient
H_2, 225
Rectangular slab model, 259
Reddening
see Interstellar reddening
Red giants, 297
in close binary systems, 45
ejection from, 6
Redshifts
optical, 153-54, 279
Redshift parameter, 155
Red stars
in Magellanic Clouds, 109
supergiants, 124
Reduction methods
in parallax measurements, 59, 62-68
Reference frame
in parallax measurements, 58, 70, 113
Reference sources
in radio astronomy, 77
Reference star
in parallax measurements, 68
see also Comparison star
Reflecting horn antenna, 81
Reflecting telescopes
radio, 147
Refection effect, 324
Refracting telescopes
in parallax measurements, 60
Refraction anomalies
in parallax measurements, 62-63
Relative parallax, 58, 59
reduction, 68-76
Relativistic gas
see Superdense star
Relativistic hydrodynamics, 408
Relativistic particles
in radio astronomy, 146, 153, 166
Reliability
of parallax measurements, 65
Residual intensity, 5
Residual neutron state, 408
Residuals
in parallax measurements, 64, 75
β Residuals, 434
Residual systematic effects
in parallax measurements, 59
Resistive elements
as standards in radio astronomy, 78
Resistive losses, 81, 92
Resolution
change, 254
in radio astronomy, 145
see also High resolution
Resonance lines
of H_2, 208
in long-period variables, 31
Resonance scattering, 246
Resonant detector
for gravitational radiation, 426
Resonant fluorescence, 227
Response curves
for spectral classification, 451
Response function
in radio astronomy, 77
Rest-frequency
of atom, 77
Rest mass, 400
Restricted three-body problem, 38, 40, 52
Reversal
atmospheric, 6
Reversing layer
in close binary systems, 51
in long-period variables, 23
R Gem, 305
R Her, 20
R Hya, 24
Riemann curvature
tensor, 426
Right ascension
as coordinate
in parallax measurements, 58, 65
Rigidity index, 397
Rigid rotator
close binaries as, 54
Ring formation
in close binary systems, 38
R Leo, 332
Rocket observations
cosmic rays, 414
H_2, 219
infrared, 199
for long-period variables, 19
radio, 93
Ropes
magnetic, 316
Rosseland mean, 174, 354
Rotating coordinates
in close binary problems, 52
Rotation
direct
in close binary systems, 40
in Magellanic Clouds, 111, 113-16, 124-30
and spectral classification, 461-62
Rotational broadening, 294, 319, 450
Rotational correction factor, 219
Rotational coupling, 353
Rotational levels
of H_2, 208, 212-13
Rotational temperature, 22
Rotation axes
of radio galaxies, 289
Rotation curve
classical Cepheids, 27
Rotation depth, 256, 258, 259, 260, 268, 270, 285
Rotation measure, 249, 256, 260, 263, 267-68, 272
Rotation parameter
in spectral classification, 462
Rotation-vibration band
H_2, 208
in long-period variables, 32
Rounded-off coordinates
in parallax measurements, 63
r process, 13, 318
RR Lyrae variables
in Magellanic Clouds, 105, 138
magnetic, 295, 305, 373
and pulsation theory, 366
RS Her, 20
Rubidium
in stars, 11, 13
RU Cam, 369
Russell-Saunders coupling
H_2, 209
RV Agl, 20
RV Arictis, 374
R Vir, 20
RV Tauri variables, 353, 374, 391
RW Per, 42
RW Tauri, 38, 42
Rydberg series, 236
RY Gem, 42
RZ Sct, 50-51, 54

S

Samarium
in stars, 300
Satellite galaxies
Magellanic Clouds as, 129
Satellite observations
H_2, 208, 230
radio astronomy, 92

Saturation
of spectral line
in stellar atmosphere, 5
Saturation effects, 217-18, 219, 295
Saturation polarization, 298
Saturn
H_2, 215, 216, 220
Sbc galaxies
and Magellanic Clouds, 116
Scale coefficient
in parallax measurements, 64
Scale height
see Density scale height; Pressure scale height
Scandium
in stars, 12, 300
Scattering
by H_2, 240-41
see also Raman scattering; Rayleigh scattering
Schmidt telescope
in parallax measurements, 72
Schuster-Schwarzschild model, 5
Schwarzschild geometry, 408
Schwarzschild radius, 394, 398
Scintillation effects
in radio astronomy, 89
β Scl, 340
α Sco, 202
μ Sco, 201
τ Sco, 4
II Scorpii association, 442, 447, 448, 449
S CrB, 20
Screening effect, 5
α Sct, 9
δ Sct, 9
δ Scuti, 374
δ Scuti variables, 353, 371, 391
Seasonal effects
in parallax measurements, 59
Secondary standards
in radio astronomy, 84
Sector techniques
in parallax measurements, 74
Secular equilibrium
and hydrogen burning, 448
Seed nuclei, 11
Selection rules, 211, 212, 233
Selective absorption
in long-period variables, 22
Selective excinction, 194
s elements, 11
Selenium
in stars, 305
Self-accelerating mechanism
in close binary rings, 49
Self-excited dynamo mechanism, 314
Self-excited pulsation, 360
Semiempirical methods
in model stellar atmospheres, 6
Semiregular variables, 20, 23
Sensitivities
of infrared detectors, 193
Separation
of double sources
in radio astronomy, 148
α Ser, 9
γ Ser, 4, 9
λ Ser, 9
χ Ser, 307, 310, 324
39 Ser, 9
Series expansion
for close binary problem, 39
h^1 Sgr, 338
Sgr A, 80
Shallow envelope models
in pulsation theory, 369
Shapley's Constellations
see Constellations
Shapley's Wing
of Small Magellanic Cloud
see Wing
Sharp lines
of emission
in radio galaxies, 153
Sharp-line stars, 295, 298, 317
Shear strength
of superdense stars, 396
Shell spectrum, 49
of Magellanic Clouds, 109
Shell structure
in Magellanic Clouds, 112
in radio galaxies, 164, 282
in supernova remnants, 272
see also Filaments; H II regions; Planetary nebulae
Shock waves
in protostars, 182, 184
in pulsating stars, 359, 360, 382
in superdense stars, 408
Short-period variables, 23, 383
Cepheids, 373
in Magellanic Clouds, 106
see also RR Lyrae stars
Side lobes
antenna, 92
Siding Spring Observatory
Magellanic Cloud studies, 110
Silicon
in protostars, 176, 306
in stars, 12, 294, 300, 301, 307
Single polarization feed, 265
Singular condition
of superdense stars, 394
Sinks
of pulsational energy, 358
Sinusoidal forcing function
in pulsation theory, 359
Sirius
abundances, 4
Six-color photometry, 19, 22
Six-constant formulae
in parallax measurements, 63
Size
Virgo A, 155
Skin fields, 276
Sky brightness
in radio astronomy, 77, 87-91
Slab model, 260, 261, 282, 286
see also Rectangular slab model
Slit spectrograms
of Magellanic Clouds, 108, 132
Slow contraction, 171
Slow rotators, 299, 317
Small-amplitude oscillation
in pulsation theory, 355
Small Magellanic Cloud, 95, 105, 107, 110
see also Chemical composition; Clusters; Rotation
Sodium
in stars, 13, 300
Solar cycle
sunspots, 293
Solar nebula, 49
Solar neighborhood
local velocities, 128
Solar system
formation, 172
Solar wind
from superdense stars, 413
Sorting
see Gravitational sorting; Magnetic sorting; Spectral sorting
Sound velocity, 172
Source function
in model stellar atmospheres, 4
Source models, 285-87
Source parameters, 279
Sources
of pulsational energy, 358
Southern hemisphere objects
Magellanic Clouds, 95-144
radio observations, 166

Southern sky survey
polarization, 268
Space curvature, 402-3
Space symmetry
of hydrogen molecule, 211
Spallation, 318
Spectral classification, 6
of long-period variables, 29-30
with photoelectric indices, 453-70
photoelectric narrow-band photometry, 433-70
observational techniques, 433-35
Spectral effect, 254
Spectral energy distribution
of long-period variables, 19-23
Spectral index
for classification, 433-70
in radio observations, 166, 248
of Virgo A, 161, 165
Spectral response, 193
Spectral sorting
in Magellanic Clouds, 111
Spectrograph photometer, 435
Spectroscopic binaries, 299, 442
see also Close binary systems
Spectroscopic observations
for eclipsing binaries, 35
for long-period variables, 19, 21
for Magellanic Clouds, 109, 110
Spherical contraction, 313
Spherical correction
in parallax measurements, 61
Spherically symmetric modes
of oscillation
in superdense stars, 424
Spherical source model, 261
in radio astronomy, 286
Spherical symmetry
distortion from
in close binaries, 37
Spillover, 83, 93
Spin function
hydrogen molecule, 211
Spin-rotation interaction
H_2, 213
Spiral arm
local, 268
Spiral galaxies
radio, 154, 158
Spiral structure
of characteristic curves
for superdense stars, 398
of Magellanic Clouds, 112, 113, 116, 122
Splitting
ρ-type, 211, 237
s process, 11, 12, 318
Sproul 24" objective, 60
Sproul parallaxes, 58, 61
Spurs, 269
see also North Galactic Spur
Squint effects, 264
Sr II
in long-period variable stars, 31
in magnetic stars, 307
S star, 305, 306
S_1 surface
in close binaries
see Contact surface
Stability
of close binary orbits, 39
stars in, 42
of focus
in parallax measurements, 60, 67
of levels
of H_2, 212
of protostars, 173, 186
of pulsating stars, 359, 362-70
of stars
in Magellanic Clouds, 109
Stability analysis
quasi-adiabatic, 353
Stabilizing mechanisms
pulsation theory, 362
Standard baryon, 396
Standard coordinates
in parallax measurements, 63, 64
Standard law
of wavelength dependence, 436
Standard of rest
see Local standard of rest
Standard reference frame, 58, 63
Standards
absolute
of noise power, 84-87
Standing waves
in pulsation theory, 358
Stark effect, 246, 319
Static equilibrium, 315
Static model
in pulsation theory, 355, 375
Static-model envelope, 353, 359, 368, 375
Stationary states
of stars, 315
Statistical equilibrium, 229
in superdense stars, 406
Statistical parallax
for long-period variables, 23
Statistical weights, 211
Stellar ages
see Age
Stellar associations
see Associations
Stellar atmospheres
abundances, 1
H_2 in, 222-24
models, 4-5
see also Model stellar atmospheres
Stellar evolution
and abundances, 1
and Magellanic Clouds, 95, 111
see also Protostars
Stellar interiors, 12
protostars, 186
relation to spectral classification, 452
synthesis in, 6
Stellar parallaxes, 57-76
Stellar spectra
abundance determinations, 1-17
see also Spectral classification
Stellar structures
see Protostars; Stellar atmospheres; Stellar interiors
Stellar wind
from superdense stars, 413
Stiffness parameters
in superdense stars, 405
Stokes parameters, 246, 248, 251, 270
Stratification
of lines
in stellar atmospheres, 5
of magnetic fields, 318
of material
in close binary systems, 51
Stratoscope II
observations, 22
Stray factor, 91-92
of antennas, 81
Streamlines
magnetic, 316
Stream phenomena
in Magellanic Clouds, 112
Strong interactions
hydrogen molecule, 236
Strong-line stars, 464
Strontium
in stars, 13, 299, 300, 318, 445
Structure
internal
of protostars, 184-89
of Magellanic Clouds, 106, 111
fine, 118
see also Bar; Clusters; Wing
of radio galaxies, 145-70

see also Radio galaxies
see Hydrogen molecule
S-type variable star, 19
Subdwarfs
abundances, 4, 7, 12, 305
Subgiants
abundances, 10
Sublevels
H_2, 208
Subreflector supports
in radio antenna, 83
SU Dra, 366
Sun
cosmic ray flux from, 220
curve of growth, 2
differential rotation of, 54
infrared observations, 195
local standard of rest, 128
radio observations, 80
see also Solar cycle
Sunspot activity, 317
see also Solar cycle
Superadiabatic layers, 323
Supercriticality
in superdense stars, 427
Superdense stars, 393-432
dynamics of collapse, 407-10
gap in equilibrium configuration, 395-407
supernovae and superdense star observations, 410-30
Supergiants, 23, 30, 33, 297
infrared observations, 198, 200
in Magellanic Clouds, 95, 109, 124, 125
pulsating, 368
Super-hyperon stars, 405
Supernovae
and superdense stars, 393
Supernova outbursts, 6
Supernova remnants
Crab Nebula, 410-14
in Magellanic Clouds, 112, 117-19, 122-24, 132
polarization of, 269-73
Supernuclear densities
in superdense stars, 405, 406
Superrelativistic electrons
in supernova remnants, 418
Supersonic effects
in protostars, 173
Super-synthesis techniques, 147, 148, 282
Supplement
to General Parallax Catalogue, 67
Suprathermal particles, 178
Surface-condition curve
for protostar, 190
Surface conditions
in protostars, 184-88
Surface gravitational acceleration, 438, 448
see also Surface gravity
Surface gravity
in Cepheids, 361, 376
of superdense stars, 395
Surface ionization zones, 357, 358
in pulsation theory, 364
Surface luminosity amplitude, 365
Surface nuclear reactions, 318
Surface temperature
superdense stars, 393
Surveys
of radio astronomical observation, 147-50
Sustaining pressure
in superdense stars, 397
Switching techniques
in radio astronomy, 85
SX Ari
see 56 Ari
SX Her, 9
SX Phoenicis, 374
Symmetry rules
for transitions, 212
Symposium
on Magellanic Clouds, 103
see also IAU
Synchronism techniques
in radio astronomy
Synchronization
in close binaries, 40, 49-53
Synchronous demodulation, 265
Synchrotron lifetime
for X rays, 422
Synchrotron losses, 166
Synchrotron radiation, 145, 146, 150, 153, 161, 245, 250-53, 298
in superdense stars, 417
Systematic effects
in parallax measurements, 59, 71
Systematic errors, 294
in infrared measurements, 199

T

Tartu seminar, 394
α Tau, 8, 202
γ Tau, 8
δ Tau, 8
ϵ Tau, 8
θ Tau, 8
9 Tau, 328
10 Tau, 8
41 Tau, 310
53 Tau, 300
63 Tau, 5
68 Tau A, 328
Taurus A, 80
Techniques
in radio astronomy, 145
see Spectral classification
Temperature
antenna
see Ambient temperature; Brightness temperature
in stellar atmospheres, 4, 201-5
effective, 19
rotational, 22
see also Critical temperature
in superdense stars
see Surface temperature
Temperature amplitude, 357
Temperature criterion, 5
Temperature effect
in long-period variables, 21
Temperature gradient
adiabatic, 377
effect
on parallax measurements, 62
in stellar atmospheres, 5
Temperature perturbation
in model stellar atmospheres, 4
Temperature reddening, 198
Term values
experimental
for hydrogen molecule, 233-37
Terrestrial absorption bands, 231
see also Atmospheric absorption; Water vapor bands
χ^2 Test, 28
Thallium
in stars, 306
Thermal boundary
in pulsation theory, 358
Thermal effects
on lenses
in parallax measurements, 60
Thermal electron density, 258
Thermalization
of mass motion
in protostars, 182
Thermal noise source, 84
Thermal radiation
in protostars, 179
Thermal relaxation
in protostars, 183
in pulsation theory, 358
Thermal sources, 86
in Magellanic Clouds, 123

in radio astronomy, 78
Thermistors
in parallax measurements, 60
Thermodynamic equilibrium
local, 2
Thermoelectric observations, 193
Thermonuclear evolution, 393
Three-body problem, 38, 40
restricted, 40
Three-color photometry
for observing long-period variables, 23
Three-dimensional classification
in spectral classification, 466-67, 470
Three-port circulator
in radio astronomy, 86
Threshold
for H_2 transitions, 234
Tidal friction
in close binary systems, 44
in Magellanic Clouds, 141
in magnetic stars, 325
Tilt
see Inclination
Time
geometrical, 396
proper, 385
for superdense stars, 394
Time-dependent Eddington approximation, 358
Time-scales
contraction, 172, 174, 190
cooling, 172-74
dissociation of H_2, 226
expansion and free fall, 173, 178-80
heating, 173
TiO bands
in stars, 20, 21, 24, 29
TiO index, 30
Titanium
in Magellanic Cloud stars, 110
in stars, 12, 300
Tolman-Oppenheimer-Volkoff equation
for hydrostatic equilibrium, 396
Toroidal fields, 315, 316, 321
Torque transfer, 313
Torsional oscillation, 321
Total extinction, 194
Total flux
in radio astronomy, 78
Toulouse zone
of Astrographic Catalogue, 61
Trailing-arms hypothesis, 289
Transactions of the IAU, 104
Transbismuth activities
in superdense stars, 418
Transfer equation, 3
Transfer losses
in radio astronomy, 79
Transition integral, 212
Transition period
in pulsation theory, 384
Transition probability
radiative, 176
Transitions
in the hydrogen molecule, 211-13
Transition stars, 305
Translational absorption, 209
by H_2, 222
Transmission loss
in radio astronomy, 79
Transmission wavelength
in narrow-band photometry, 434
Transparency
atmospheric, 435
interstellar, 232
Transparency peak
infrared, 199
Transparent protostars, 175-80
Transverse electric field
in polarization measurements, 246
Transverse magnetic field, 256
Transverse polarization
in radio astronomy, 83
Transverse polarization ellipse, 247
Transverse Zeeman effect, 298
α Tri, 8
δ Tri, 8
Trigonometric parallaxes of stars
accuracy, 57-76
conversion to absolute parallax, 68-76
observational errors, 59-62
reduction, 62-68
for spectral classification, 456
Triple radio sources, 151, 156
T Tauri stars, 13
as protostars, 191
TT Hya, 42
47 Tuc, 24, 32, 33, 99, 136
TU Cas, 374
Turbulence
small-scale, 313
in stellar atmospheres, 6
Turbulence parameter
atmospheric, 465
Turbulent velocity, 303
Turnoff
see Turnup
Turnup point
on main sequence, 448
Two-body problem
for close binary systems, 36
Two-color plot
for long-period variables, 23
Two-component structure
of radio sources, 146, 148
Two-dimensional classification, 438-41, 451, 452, 453-57
Two-element interferometer, 265
Two-nucleon reactions
in superdense stars, 418
Two-step reduction
of parallax measurements, 63
TX Cam, 203
Type a variables, 383
Type ab variables, 371
Type c variables, 371
λ-Type doubling, 211, 237
Type Sbc galaxies
see Sbc
Type I supernovae, 412
Type II supernovae, 124, 412
TY Vir, 8

U

UBV photometry, 19-21
in Magellanic Cloud studies, 121
in spectral classification, 443, 444, 449
UBVRI photometry, 196
U Cephei, 37, 50, 51, 54
Ultrafine structure
of hydrogen molecule, 206
Ultra-sharp-line stars, 295
Ultraviolet albedo, 219
Ultraviolet excess, 464
Ultraviolet magnitude
for long-period variables, 23
Ultraviolet radiation, 201
from close binary systems, 49
from hydrogen molecules, 222, 231
from Large Magellanic Cloud, 96
from long-period variables, 23
from superdense stars, 413

α UMa, 8
ϵ UMa, 302, 303, 304, 306, 307
θ UMa, 8
15 ι UMa, 332
36 UMa, 8
ξ UMa, 8, 9
Uncertainty
  in superdense stars, 395
Unevolved stars, 447, 448
  see also Protostar
Uniform model
  for superdense stars, 400-2
Underabundant elements
  in magnetic stars, 299, 301
United atom theory, 234
Unreddened stars
  two-dimensional classification, 453-57
Unresolved binaries, 65
  see also Spectroscopic binaries
Uppsala-Schmidt survey
  of Magellanic Clouds, 95, 96, 97
Uranus
  atmosphere of
    hydrogen molecule in, 215, 216
Ursa Major group, 299
U Tr A, 374
uvby photometry, 317
  use in spectral classification, 435, 436, 437, 441

V

Vacuum ultraviolet, 234
  see also Ultraviolet
Vanadium
  in stars, 12, 300
Van Vleck parallaxes, 58
Variable radio sources, 89
Variable-spacing interferometers, 146
Variable stars
  absolute magnitudes, 23-25
  color and energy distribution, 19-23
  galactic distribution and kinematics, 25-29
  interstellar reddening, 22-23
  long-period variables, 19-34
  spectral observations, 29-32
  UBV photometry, 19-21
Variational methods
  in pulsation theory, 356
  in stellar structure, 315
Vega, 57
Veiling effect, 30
Vela X, 272, 273
Velocity
  of local standard of rest, 128
  of sound
    in protostars, 172
Velocity curve
  see Radial velocity
Velocity dispersion
  in Magellanic Clouds, 113, 129
  of variable stars, 28
Vertical main sequence
  in Magellanic Clouds, 132
Vesta
  abundances, 2
Vibrational modes
  in superdense stars, 396
Vibrational quantum number, 211
Vibration bands
  in hydrogen molecule, 214
Vibration damping
  in superdense stars, 423
Vibration-rotation levels
  of hydrogen molecule, 210, 213, 214, 218, 232, 233
β Vir, 9
γ Vir, 299
32 d^2 Vir, 334
ϵ Vir, 3, 4, 9
78 o Vir, 334
32 Vir, 305, 325
78 Vir, 297, 309, 441
Virgo A, 155, 161-63
Viscosity, 323
Visibility amplitude, 148
Visibility function, 266
Visible radio galaxies, 145, 154-55
Visual albedo, 209
Visual binaries, 46, 305
Visual light
  from long-period variables, 19, 21
Vitense method, 380
von Zeipel's theorem, 315
VV Cep, 305, 340
VW Cyg, 42
VZ Cancri, 374, 383

W

Walraven method
  of spectral classification, 453
Water vapor bands
  absorption
    in long-period variables, 22
    in radio astronomy, 88
Wave function
  electronic
    of H_2, 210
Wavelength dependence
  radio, 151-52
  standard law, 436
Wave period, 218
Wave velocity, 316
WC stars
  in Magellanic Clouds, 110
Weakening
  of lines
    in long-period variables, 30-31
Weak-line approximation, 5, 14
Weak-line stars, 464
Weak transitions
  quadrupole, 215
Weight
  statistical
    of observational data, 83
Weight function
  in pulsation theory, 315, 316
Werner bands, 212, 227, 231
Wesselink's ξ, η system, 105
W Her, 20
White dwarfs, 395, 403
Wide-band filters, 199
Wide-band index, 433
Wide-band magnitudes, 194
Wilson 10367, 4, 9
Winding
  of magnetic fields, 287
Window
  atmospheric
    in the infrared, 194
Wing
  of Small Magellanic Cloud, 95, 108, 118, 134
WN stars
  in Magellanic Clouds, 110
Wolf-Rayet stars
  in Magellanic Clouds, 110, 132
WR stars
  in Magellanic Clouds, 106
W Ursae Majoris, 49
W Vir, 370, 390
WY Gem, 305

X

X Mon, 24
X Oph, 24, 321
X rays, 393, 411
  and superdense stars, 414, 419
x, y system, 105

Y

Yale parallaxes, 58
Yellow giants, 7
Yellow magnitude
  of long-period variables, 23

Yellow supergiants
in Magellanic Clouds, 124
Yerkes classification, 304
Yerkes refractor, 57
Young clusters
in Magellanic Clouds, 120, 131-34
protostars, 190
Young stars
variables, 33
see also Population I
Yttrium
in stars, 11, 13, 39, 122, 299, 300, 318
in superdense stars, 394
YY Gem, 201, 202

Z

Z Cyg, 20
Zeeman effect, 246, 294, 295
in magnetic stars, 298, 300, 309, 319
Zel'dovich packing parameter, 400
Zenith absorption
in radio observation, 88
Zero-age main sequence, 189
Magellanic Clouds, 110
spectral classification, 439, 448
Zero-point energy
of hydrogen molecule, 211, 234
Zero-velocity surfaces
in close binary problem, 43, 52
Zinc
in stars, 11, 18, 300
Zirconium
in stars, 11, 299, 300, 306, 318

CUMULATIVE INDEXES

VOLUMES 1-4

INDEX OF CONTRIBUTING AUTHORS

A

Antrack, D., 2:327
Abell, G. O., 3:1
Arpigny, C., 3:351

B

Babcock, H. W., 1:41
Baldwin, R. B., 2:73
Baum, W. A., 2:165
Biermann, L., 2:327
Blaauw, A., 2:213
Bok, B. J., 4:95
Brouwer, D., 1:219
Burke, B. F., 3:275

C

Cayrel, R., 4:1
Cayrel de Strobel, G., 4:1
Christiansen, W. N., 1:1
Christy, R. F., 4:352
Clemence, G. M., 3:93

D

Dressler, K., 4:207
Dyson, J. E., 3:47

E

Eggen, O. J., 3:235

F

Field, G. B., 4:207
Findlay, J. W., 4:77
Friedman, H., 1:59

G

Gaposchkin, C. P., 1:145
Gardner, F. F., 4:245
Ginzburg, V. L., 3:297
Greenberg, J. M., 1:267

H

Hawkins, G. S., 2:149
Hayashi, C., 4:171
Huang, S.-S., 4:35

J

Johnson, H. L., 4:193

K

Kahn, F. D., 3:47
Kellogg, W. W., 1:235
King, I. R., 1:179

L

Layzer, D., 2:341
Ledoux, P., 4:293
Leighton, R. B., 1:19
Lüst, Rh., 2:327

M

Michie, R. W., 2:49
Mills, B. Y., 2:185
Minkowski, R., 2:247
Moffet, A. T., 4:145

O

Oke, J. B., 3:23
Ollongren, A., 3:113
Osterbrock, D. E., 2:95

P

Pagel, B. E. J., 2:267
Pecker, J.-C., 3:135
Pettengill, G. H., 3:377
Preston, G. W., 2:23

R

Renson, P., 4:293
Roberts, M. S., 1:149
Robinson, B. J., 2:401

S

Sagan, C., 1:235
Sargent, W. L. W., 2:297
Severny, A. B., 2:363
Shapiro, I. I., 3:377
Smak, J. I., 4:19
Smerd, S. F., 1:291
Somerville, W. B., 4:207
Strömgren, B., 4:433
Suess, H. E., 3:217
Syrovatskii, S. I., 3:297

V

Van Regemorter, H., 3:71
Vasilevskis, S., 4:57

W

Warwick, J. W., 2:1
Weiss, A. A., 1:291
Wentzel, D. G., 1:195
Weymann, R., 1:97
Wheeler, J. A., 4:393
Whitecak, J. B., 4:245
Wild, J. P., 1:291

Z

Zähringer, J., 2:121
Zhevakin, S. A., 1:367

INDEX OF CHAPTER TITLES

OBSERVATION AND INSTRUMENTATION		
Radio Telescopes	W. N. Christiansen	1:1-18
Photosensitive Detectors	W. A. Baum	2:165-84
Receivers for Cosmic Radio Waves	B. J. Robinson	2:401-32
Absolute Intensity Calibrations in Radio Astronomy	J. W. Findlay	4:77-94
Astronomical Measurements in the Infrared	H. L. Johnson	4:193-206
The Polarization of Cosmic Radio Waves	F. F. Gardner, J. B. Whiteoak	4:245-92
Spectral Classification Through Photoelectric Narrow-Band Photometry	B. Strömgren	4:433-72
GALAXIES, CLUSTERS, NEBULAE		
The Content of Galaxies: Stars and Gas	M. S. Roberts	1:149-78
The Dynamics of Galaxies	I. R. King	1:179-94
Magnetic Fields and Spiral Structure	D. G. Wentzel	1:195-218
Interstellar Grains	J. M. Greenberg	1:267-90
The Dynamics of Star Clusters	R. W. Michie	2:49-72
Planetary Nebulae	D. E. Osterbrock	2:95-120
Nonthermal Radio Frequency Radiation from the Galaxy	B. Y. Mills	2:185-212
The O Associations in the Solar Neighborhood	A. Blaauw	2:213-46
Clustering of Galaxies	G. O. Abell	3:1-22
The Energy Balance and Dynamics of the Interstellar Medium	F. D. Kahn, J. E. Dyson	3:47-70
Theory of Stellar Orbits in the Galaxy	A. Ollongren	3:113-34
Radio Radiation from the Galactic Nuclear Region	B. F. Burke	3:275-96
Magellanic Clouds	B. J. Bok	4:95-144
The Structure of Radio Galaxies	A. T. Moffet	4:145-70
STELLAR STRUCTURE AND ATMOSPHERE		
Mass Loss from Stars	R. Weymann	1:97-144
Novae and Novalike Stars	C. P. Gaposchkin	1:145-48
Physical Basis of the Pulsation Theory of Variable Stars	S. A. Zhevakin	1:367-400
The RR Lyrae Stars	G. W. Preston	2:23-48
Supernovae and Supernova Remnants	R. Minkowski	2:247-66
The Atmospheres of the Magnetic and Metallic-Line Stars	W. L. W. Sargent	2:297-326
Absolute Spectral Energy Distributions in Stars	J. B. Oke	3:23-46
Model Atmospheres	J.-C. Pecker	3:135-216
Some Observational Aspects of Stellar Evolution	O. J. Eggen	3:235-74
Abundance Determinations from Stellar Spectra	R. Cayrel, G. Cayrel de Strobel	4:1-18
The Long-Period Variable Stars	J. I. Smak	4:19-34
Problems of Close Binary Systems That Involve Transfer of Angular Momentum	S.-S. Huang	4:35-56
Evolution of Protostars	C. Hayashi	4:171-92
Magnetic Stars	P. Ledoux, P. Renson	4:293-351
Pulsation Theory	R. F. Christy	4:352-92
Superdense Stars	J. A. Wheeler	4:393-432
SOLAR PHYSICS		
The Solar Granulation	R. B. Leighton	1:19-40
The Sun's Magnetic Field	H. W. Babcock	1:41-58
Ultraviolet and X Rays from the Sun	H. Friedman	1:59-96
Solar Bursts	J. P. Wild, S. F. Smerd, A. A. Weiss	1:291-366
The Structure of the Solar Chromosphere	B. E. J. Pagel	2:267-96

Solar Flares	A. B. Severny	2:363-400
THE SOLAR SYSTEM (PLANETARY SYSTEM)		
The Terrestrial Planets	C. Sagan, W. W. Kellogg	1:235-66
Radio Emission from Jupiter	J. W. Warwick	2:1-22
The Moon	R. B. Baldwin	2:73-94
Isotope Chronology of Meteorites	J. Zähringer	2:121-48
Interplanetary Debris near the Earth	G. S. Hawkins	2:149-64
Some Statistical Properties of Comets with Plasma Tails	D. Antrack, L. Biermann, Rh. Lüst	2:327-40
Chemical Evidence Bearing on the Origin of the Solar System	H. E. Suess	3:217-34
Spectra of Comets and Their Interpretation	C. Arpigny	3:351-76
Radar Astronomy	G. H. Pettengill, I. I. Shapiro	3:377-410
COSMOLOGY		
The Formation of Stars and Galaxies: Unified Hypotheses	D. Layzer	2:341-62
FUNDAMENTAL ASTRONOMY		
Review of Celestial Mechanics	D. Brouwer	1:219-34
The System of Astronomical Constants	G. M. Clemence	3:93-112
PHYSICAL PROCESSES		
Spectral Line Broadening	H. Van Regemorter	3:71-92
Cosmic Magnetobremsstrahlung (Synchrotron Radiation)	V. L. Ginzburg, S. I. Syrovatskii	3:297-350
Hydrogen Molecules in Astronomy	G. B. Field, W. B. Somerville, K. Dressler	4:207-44
ASTROMETRY		
The Accuracy of Trigonometric Parallaxes of Stars	S. Vasilevskis	4:57-76